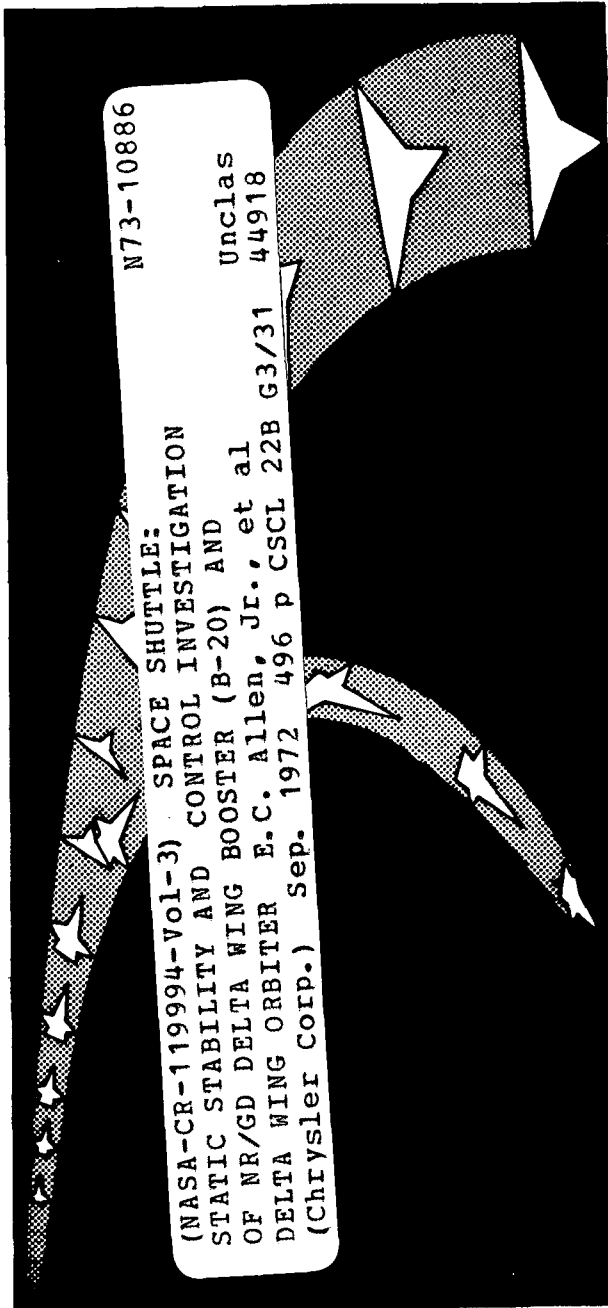


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CR-119,994
SEPTEMBER 1972



—SPACE SHUTTLE—

**STATIC STABILITY AND
CONTROL INVESTIGATION
OF NR/GD DELTA WING
BOOSTER (B-20) AND
DELTA WING ORBITER (134D)**

VOLUME III

by

**E.C. ALLEN, NR
F.W. EDER, GD/C**

**MSFC 14-INCH TRISONIC
WIND TUNNEL**

**Marshall Space
Flight Center**

**SADSAC SPACE SHUTTLE
AEROTHERMODYNAMIC
DATA MANAGEMENT SYSTEM**

**CONTRACT NAS8-4016
MARSHALL SPACE FLIGHT CENTER**

N A S A

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DMS-DR-1130
CR-119,994
VOLUME III
SEPTEMBER, 1972

SADSAC/SPACE SHUTTLE

WIND TUNNEL TEST DATA REPORT

CONFIGURATION: Delta Wing Booster Alone (B-20) and With Delta Wing Orbiter
(134D), 0.0035 Scale Model

TEST PURPOSE: Static Stability and Control Investigation

TEST FACILITY: NASA/MSFC 14 x 14 Inch Trisonic Wind Tunnel

TESTING AGENCY: North American Rockwell

TEST NO. & DATE: MSFC TWT 490; 4/15/71 through 5/5/71

FACILITY COORDINATOR: Mr. J. Weaver - NASA/MSFC

PROJECT ENGINEER(S): Mr. E. C. Allen - NR

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ABSTRACT

Experimental aerodynamic investigations have been made on a .0035 scale model North American Rockwell/General Dynamics version of the space shuttle in the NASA/MSFC 14 x 14 Inch Transonic Wind Tunnel. Static stability and control data were obtained on the delta wing booster alone (B-20) and with the delta wing orbiter (134D) mounted in various positions on the booster. Six component aerodynamic force and moment data were recorded over an angle of attack range from -10° to 24° at 0° and 6° sideslip angles and from -10° to $+10^{\circ}$ sideslip at 0° angle of attack. Mach number ranged from 0.6 to 4.96.

This document is the first of four volumes presenting the results of the MSFC TWT 490 test. The contents of each volume are indicated below:

- Volume I - Delta Wing Booster
- Volume II - Launch Configuration Piggyback Baseline
- Volume III - Launch Configurations Piggyback, Belly to Belly and Incidence Variations
- Volume IV - Launch Configurations Component Data
Booster, Orbiter Build-up

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NOMENCLATURE

(General)

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
α	ALPHA	angle of attack, angle between the projection of the wind X_w -axis on the body X, Z-plane and the body X-axis; degrees
β	BETA	sideslip angle, angle between the wind X_w -axis and the projection of this axis on the body X-Z-plane; degrees
ψ	PSI	yaw angle, angle of rotation about the body Z-axis, positive when the positive X-axis is rotated toward the positive Y-axis; degrees
ϕ	PHI	roll angle, angle of rotation about the body X-axis, positive when the positive Y-axis is rotated toward the positive Z-axis; degrees
ρ		air density; K_g/m^3 , slugs/ft ³
a		speed of sound; m/sec, ft/sec
V		speed of vehicle relative to surrounding atmosphere; m/sec, ft/sec
q	Q(PSI) Q(PSF)	dynamic pressure; $1/2\rho V^2$, psi, psf
M	MACH	Mach number; V/a
RN/L	RN/L	Reynolds number per unit length; million/ft
p		static pressure; psi
P		total pressure; psi
C_p	CP	pressure coefficient; $(p-p_\infty)/q$

NOMENCLATURE (Continued)

Reference & C. G. Definitions

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
S		wing area; m^2 , ft^2
S	SREF	reference area; m^2 , ft^2
\bar{c}		wing mean aerodynamic chord or reference chord; m, ft, in (see l_{ref} or LREF)
l_{ref}	LREF	reference length; m, ft, in.; (see \bar{c})
b_{ref}	BREF	wing span or reference span; m, ft, in
A_b		base area; m^2 , ft^2 , in^2
c. g.		center of gravity
MRP	MRP	abbreviation for moment reference point
	XMRP	abbreviation for moment reference point on X-axis
	YMRP	abbreviation for moment reference point on Y-axis
	ZMRP	abbreviation for moment reference point on Z-axis

NOMENCLATURE (Continued)

Axis System General

<u>SYMBOL</u>	<u>DEFINITION</u>
F	force; F, lbs
M	moment; M, in-lb

<u>Subscript</u>	<u>Definition</u>
N	normal force
A	axial force
L	lift force
D	drag force
Y	force or moment about the Y axis
Z	moment about the Z axis
X	moment about the X axis
s	stability axis system
w	wind axis system
ref	reference conditions
∞	free stream conditions
t	total conditions
b	base

NOMENCLATURE (Continued)
Body & Stability Axis System

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
<u>Body Axis System</u>		
C_N	CN	normal force coefficient; F_N/qS
C_A	CA	axial force coefficient; F_A/qS
C_{A_b}	CAB	base axial force coefficient; $\begin{bmatrix} -1 \\ \end{bmatrix} \begin{bmatrix} (p_b - p_\infty)/q \end{bmatrix} (A_b/S)$
C_{A_f}	CAF	forebody axial force coefficient; $C_A - C_{A_b}$
C_n	CYN	yawing moment coefficient; $M_Z/qS b_{ref}$
C_l	CBL	rolling moment coefficient; $M_X/qS b_{ref}$
<u>Common to Both Axis Systems</u>		
C_m	CLM	pitching moment coefficient; $M_Y/qS l_{ref}$
C_y	CY	side force coefficient; F_Y/qS
<u>Stability Axis System</u>		
C_L	CL	lift force coefficient; F_L/qS
C_D	CD	drag force coefficient; F_D/qS
C_{D_b}	CDB	base drag coefficient
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_n	CLN	yawing moment coefficient; $M_{Z,s}/qS b_{ref}$
C_l	CSL	rolling moment coefficient; $M_{X,s}/qS b_{ref}$
L/D	L/D	lift-to-drag ratio; C_L/C_D
L/D_f	L/DF	lift to forebody drag ratio; C_L/C_{D_f}

NOMENCLATURE (Continued)

Surface Definitions

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
i_t	HORIZT	horizontal tail incidence; positive when trailing edge down; degrees
δ		symmetrical surface deflection angle; degrees; positive deflections are:
	AILRON	aileron - total aileron deflection; (left aileron - right aileron)/2
	CANARD	canard - trailing edge down
	ELEVON	elevon - trailing edge down
	ELEVTR	elevator - trailing edge down
	FLAP	flap - trailing edge down
	RUDDER	rudder - trailing edge to the left
	SPOILR	spoiler - trailing edge down
	TAB	tab - trailing edge down with respect to control surface
δ		antisymmetrical surface deflection angle, degrees; positive trailing edge down:
	AIL-L	left aileron - trailing edge down
	AIL-R	right aileron - trailing edge down
	ELVN-L	left elevon - trailing edge down
	ELVN-R	right elevon - trailing edge down
	SPLR-L	left spoiler - trailing edge down
	SPLR-R	right spoiler - trailing edge down

<u>SURFACE SUBSCRIPTS</u>	<u>DEFINITION</u>
a	aileron
b	base
c	canard
e	elevator or elevon
f	flap
r	rudder or ruddervator
s	spoiler
t	tail

CONFIGURATIONS INVESTIGATED

The booster model was composed of the following components

B₂₀ - body (see Figure 8)

W₁₄ - wing (see Figure 9)

Cl_B - canard (see Figure 10)

V₈ - vertical stabilizer (see Figure 11)

and was tested alone in the complete configuration as well as in a buildup mode. The orbiter model consisted of

B₅ - body (see Figure 12)

W₁₇ - wing (see Figure 13)

V₁₇ - vertical stabilizer (see Figure 14)

and was tested in a buildup mode on the complete booster and along with a booster buildup mode. It was also tested as a complete model at various mounting positions on the booster. The Dataset Collation Sheets give a complete summary of the configurations investigated. There were five orbiter mounting positions tested. For the piggy-back mode, where the orbiter was mounted on top of the booster, the baseline position had the orbiter nose ahead of the booster (position 1) as shown in Figures 1 and 6. There were two alternate positions tested in the piggyback mode and had the orbiter nose aligned with the booster nose (position 2, Figure 2 and 6) and the orbiter nose aft of the booster nose (position 3, Figure 3 and 6). Two belly-to-belly mounting positions were tested where the orbiter was slung under the booster in a belly-to-belly mode. The baseline position had the

CONFIGURATIONS INVESTIGATED
(Continued)

orbiter nose forward of the booster nose (position 4, Figures 4 and 6) and the alternate position had the orbiter nose well aft of the booster nose base to base (position 5, Figure 5 and 6).

Pertinent dimensional information on each of the model components tested is listed in the Model Component Description Sheets which follow the Dataset Collation Sheets.

TEST FACILITY DESCRIPTION

The Marshall Space Flight Center 14" x 14" Trisonic Wind Tunnel is an intermittent blowdown tunnel which operates by high pressure air flowing from storage to either vacuum or atmospheric conditions. A Mach number range from .2 to 5.85 is covered by utilizing two interchangeable test sections. The transonic section permits testing at Mach 0.20 through 2.50, and the supersonic section permits testing at Mach 2.74 through 5.85. Mach numbers between .2 and .9 are obtained by using a controllable diffuser. The range from .95 to 1.3 is achieved through the use of plenum suction and perforated walls. Mach numbers of 1.44, 1.93 and 2.50 are produced by interchangeable sets of fixed contour nozzle blocks. Above Mach 2.50 a set of fixed contour nozzle blocks are tilted and translated automatically to produce any desired Mach number in .25 increments.

Air is supplied to a 6000 cubic foot storage tank at approximately -40°F dew point and 500 psi. The compressor is a three-stage reciprocating unit driven by a 1500 hp motor.

The tunnel flow is established and controlled with a servo actuated gate valve. The controlled air flows through the valve diffuser into the stilling chamber and heat exchanger where the air temperature can be controlled from ambient to approximately 180°F . The air then passes through the test section which contains the nozzle blocks and test region.

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 20° ($\pm 10^{\circ}$). Sting offsets are available for obtaining various maximum angles of attack up to 25° .

DATA REDUCTION

The six aerodynamic forces and moments measured by the strain gauge balance were reduced to coefficient form in the body axis system utilizing the following reference dimensions:

$$S_{REF} = \text{booster wing planform area} = 15.656 \text{ in}^2$$

$$l_{REF} = \bar{c} = \text{booster wing mean aerodynamic chord} = 3.095 \text{ inches}$$

$$b_{REF} = \text{booster wing span} = 6.099 \text{ inches}$$

Moments are referenced, in all cases, about the booster nose which is booster fuselage station 0, water line 0, butt line 0.

For the launch configuration and booster alone tests, static pressures were measured at two locations on the booster base as shown in Figure 15. These pressures were utilized to correct the measured axial force coefficient to one which assumed free-stream static pressure at the base. The calculation of this base axial force correction was:

$$C_{A_b} = - \left[(p_{b_1} - p_{\infty}) A_{b_1} + (p_{b_2} - p_{\infty}) A_{b_2} \right] / q_{\infty} S_{REF}$$

$$\text{where } A_{b_1} = 0.418 \text{ in}^2$$

$$A_{b_2} = 0.634 \text{ in}^2$$

A further correction was made to the axial force for the pressure acting in

DATA REDUCTION
(Continued)

the balance cavity area. This force coefficient correction was determined by

$$C_{A_c} = - (p_c - p_\infty) A_c / q_\infty S_{REF}$$

where $A_c = 0.785 \text{ in}^2$

Therefore the final corrected axial force coefficient was:

$$C_{A_F} = C_A - (C_{A_b} + C_{A_c})$$

SADSAC calculation routines were utilized to obtain stability axis data; to determine the center of pressure location as a percent of body length (X_{CP}/L); to calculate cross-derivative data ($C_{Y\beta}$, $C_{N\delta_e}$, $C_{Y\delta_a}$ etc.); and to determine incremental coefficients due to component addition or control surface deflection.

TABLE I
TEST CONDITIONS
TEST TWT-490

MACH NUMBER	REYNOLDS NUMBER per unit length	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
0.6	6.5×10^6	5.58	97
0.9	6.9×10^6	7.96	95
1.0	6.7×10^6	8.33	98
1.1	6.7×10^6	8.73	96
1.2	6.6×10^6	8.98	97
1.46	6.6×10^6	9.56	99
1.96	8.9×10^6	12.80	96
2.99	4.4×10^6	4.95	98
4.96	6.1×10^6	3.40	99

BALANCE UTILIZED: TWT Model 200 Moment Balance

CAPACITY:

NF 175 lbs
 SF 150 lbs
 AF 100 lbs
 PM 185 in. lbs
 YM 160 in. lbs
 RM 50 in. lbs

ACCURACY:

**COEFFICIENT
TOLERANCE:**

0.3%
0.3%
0.3%
0.3%
0.3%
0.3%

COMMENTS:

No satisfactory method is known for determining the absolute accuracy of the final data coefficients.

TEST TW-490 DATA SET COLLATION SHEET
Force-Booster, 0.0035-Scale, Stability and Control

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		CONTROL DEFLECTION		NO. OF RUNS	MACH NUMBERS									
		A	B	SE			0.6	0.9	1.0	1.1	1.2	1.46	1.96	2.99	4.96	
R32 01A	B20	A	O			5	158/6159/6		162/6	213/6208/1						
02A	B20C4B					5	140/6141/6		142/6	212/6206/6						
03A	B20C4BW14			O		7	110/6111/6	903/6	112/6	904/6220/6164/6						
04A	B20W14					5	115/6114/6		113/6	218/6165/6						
05A	B20C4BW14V8					9	001/6001/1003/6004/1	005/6221/6162/6268/6267/6								
06A						7	010/6009/6008/6007/6	004/6212/6163/6								
05B		B		O		5				278/1278/6297/6276/6275/6						
58A	B20	A	6			5	334/6331/1		332/6	285/6290/6						
07A	B20C4BW14V8					9	324/6330/6329/6328/6327/6279/6296/6274/6273/6									
05C		O	C			9	083/6084/6085/6086/6087/6223/6161/6264/6265/6									
57B		B	O	10		1									277/6	

1 7 13 19 25 31 37 43 49 55 61 67 7576

CLM CN CY KBL CYN CAF CAB KPEL CPC CL

COEFFICIENTS: $\alpha A = -10 - 8 - 6 - 4 - 2, 0, 2, 4, 6, 8, 10$

0 or B $\alpha B = 6, 8, 10, 12, 14, 16, 18, 20, 22, 24$

SCHEDULES $\alpha C = -10 - 8 - 6 - 4 - 2, 0, 2, 4, 6, 8, 10$

IDPVAR(1) IDPVAR(2) NDV

TEST TW-490 DATA SET COLLATION SHEET
Force-Booster + Orbiter, 0.0035-Scale, Launch Stability
and Control

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		CONTROL DEFLECTION		NO. of RUNS	ORB. ATT.		MACH NUMBERS									
		α	β	SE	SC		SE	POS	l	0.6	0.9	1.0	1.1	1.2	1.46	1.96	2.99	4.96
R32 08A	B20+G5	A	O			5	1	O	157/6	156/6		155/6		246/6	200/6			
09A	B20W14+B5			O		5			134/6	135/6		136/6		219/6	200/6			
10A	B20W14+B5W17					5			121/6	120/6		119/6		217/6	199/6			
11A	B20C4BW14+B5W17					5			122/6	123/6		124/6		231/6	197/6			
12A	B20C4B+B5					5			139/6	138/6		137/6		210/6	205/6			
13A	B20+B5W17					5			152/6	153/6		154/6		215/6	202/6			
14A	B20+B5W17V17					5			151/6	150/6		149/6		216/6	203/6			
15A	B20C4B+B5W17V17					5			146/6	147/6		148/6		209/6	204/6			
16A	B20C4BW14V8+B5V17					5			127/6	126/6		125/6		232/6	198/6			
17A	B20+B5		6			5			140/6	139/6		138/6		207/6	288/6			
18A	B20C4BW14V8+G5W17					5			323/6	322/6		321/6		284/6	291/6			
19A	B20C4BW14+B5W17V17					5			318/6	319/6		320/6		283/6	292/6			
20A	B20+B5W17V17					5			335/6	336/6		337/6		286/6	289/6			
21A	B20C4BW14V8+B5W17V17					9			317/6	316/6	315/6	314/6	313/6	281/6	294/6	273/6	271/6	
22A			O			9			025/6	024/6	027/6	028/6	029/6	035/6	177/6	264/6	259/6	
23A						5			024/6	023/6		022/6		236/6	178/6			
24A						5			049/6	020/6		021/6		237/6	179/6			
25A						5			018/6	017/6		016/6		238/6	180/6			
26A						8			011/6	012/6	013/6	014/6	015/6	239/6		262/6	261/6	
27A						5			032/6	031/6		030/6		240/6	182/6			

1 7 13 19 25 31 37 43 49 55 61 67 7576
CLM CN CY CBL CYN CAF CAB CPBL CPC CL
COEFFICIENTS: α A = -10.8, -6.4, -2.0, 3.4, 6.8, 10
a or b POS 1: P/G-BASE POS 4: P/G-BASE
SCHEDULES 2: P/G-N/A S: P/G-AFT
3: P/G-AFT

TEST TW-490

DATA SET COLLATION SHEET

Force - Booster + Orbiter, 0.0035-Scale, Launch Stability and Control

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		CONTROL DEFLECTION					NO. of RUNS	O/R ATT.		MACH NUMBERS									
		u	R	SE	SC	DE	SE	SE		POS	U	0.6	0.9	1.0	1.1	1.2	1.46	1.96	2.99	4.96	
R32 23A	B064B04V8+85W17V17	A	O	O	O	-10	O	O	5	1	O	033/0	034/0		035/0		241/0	183/0			
29A		B							5			038/0	037/0		036/0		242/0	184/0			
22B									1			299/0									
23B									1			300/0									
24B									1			301/0									
25B									1			302/0									
26B									1			303/0									
30B									1			304/0									
31B									1			305/0									
22C									9			046/0	045/0	044/0	043/0	042/0	243/0	186/0	244/0	263/0	
32C									9			308/0	309/0	310/0	311/0	312/0	282/0	293/0	270/0	269/0	
33C									5			047/0	048/0		049/0		246/0	187/0			
34C									5			052/0	051/0		050/0		245/0	188/0			
35C									5			039/0	040/0		041/0		244/0	185/0			
36A									5			053/0	054/0		055/0		247/0	176/0			
37A									5			058/0	057/0		056/0		248/0	175/0			
38A									5			059/0	060/0		061/0		249/0	191/0			
38C									5			070/0	069/0		068/0		252/0	192/0			
39A									5			064/0	063/0		062/0		250/0	190/0			
40A									5			065/0	066/0		067/0		251/0	189/0			

COEFFICIENTS:

a or b SCHEDULES

αA = -10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10
αB = 6, 8, 10, 12, 14, 16, 18, 20, 22, 24
αC = -10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10

POS 1: P/B-BASE POS 4: B/B-BASE
2: P/B-M/N 5: B/B-AFT
3: P/B-AFT

TEST TW-490 DATA SET COLLATION SHEET
Force-Booster + Orbiter, 0.0035-Scale, Launch Stability
and Control

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	Schd.		CONTROL DEFLECTION				NO. of RUNS	ORB. ATT.		MACH NUMBERS									
		u	R	SE	SC	SE	SE		Pos	U	0.6	0.9	1.0	1.1	1.2	1.4	1.6	1.9	2.9	4.9
232 41 A	B20C4Bw14+BSw17w17	A	O	O	O	O	O	5	3	O	076/075/6			074/0		254/0	194/0			
42C		O	C					5		↓	071/0712/6			073/6		253/0	193/6			
43A								5		2	077/078/1			079/6		255/0	195/6			
44A	↓							5	↓	4	082/081/6			089/6		256/0	196/6			
45A	B20w14+BS							5	4	O	133/6	132/6		131/6		229/6	157/6			
46A	B20w14+BSw17							5			116/6	117/6		118/6		239/6	166/6			
47A	B20C4Bw14+BS							5			128/6	129/6		130/6		228/6	168/6			
48A	B20C4Bw14+BSw17w17							5			109/6	108/6		107/6		227/6	169/6			
49A	B20C4B+BS							5			145/6	144/6		143/6		211/6	207/6			
50A	B20C4Bw14+BSw17w17							9			097/6	096/6	095/6	094/6	093/6	225/6	170/6	258/6	257/6	
51A								5			098/6	099/6		100/6		216/6	171/6			
51B								1			307/6									
50B								1			306/6									
50C								7		↓	088/6	089/6	090/6	091/6	092/6	224/6	172/6			
52A								5		2	103/6	102/6		101/6		233/6	174/6			
53A								2		↓	902/6			901/6						
54A								5		O	104/6	105/6		106/6		234/6	173/6			
55A								5		↓	331/6	325/6		326/6		289/6	295/6			
56A	↓							1		↓							181/6			

CLM CN KY CBL CYN CAF CAB CPB1 CPC CL

COEFFICIENTS:
αA = -b -8 -6 -4 -2 0 2 4 6 8 10
αB = 6 8 10 12 14 16 18 20 22 24 26
SCHEDULES
βC = -10 -8 -6 -4 -2 0 2 4 6 8 10
Pos 1: P/G-BASE IDPVAR(1) IDPVAR(2) INDV
2: P/G-N/N Pos 4: B/G-OASE
3: P/G-AFT S: B/G-AFT

TABLE III

MODEL COMPONENT: BODY - B₂₀GENERAL DESCRIPTION: Body for B-15B Delta Wing Configuration, extended
10% over basic (B₁₉) bodyDRAWING NUMBER:WT-70-105222DIMENSIONS:FULL-SCALEMODEL SCALE

AS BUILT

Length (nose to wing T. E.)

10.689

Max. Width

1.356

Max. Depth

1.587

Fineness Ratio

6.73

Area

Max. Cross-Sectional

2.252

Planform

13.809

Wetted

Base

1.840

TABLE III (CONCLUDED)

MODEL COMPONENT: Wing W14

GENERAL DESCRIPTION: W10 modified to unswept trailing edge and with twist
outboard of B. L. 340 linearly increasing to -4 degrees at tip and with leading
edge faired into fuselage (W10 is the basic B-15B wing)

DRAWING NUMBER: WT-7-105222

DIMENSIONS:	FULL-SCALE	MODEL SCALE AS BUILT
<u>TOTAL DATA</u>		
Area		
Planform		15.656
Wetted		
Span (equivalent)		6.099
Aspect Ratio		2.38
Rate of Taper		
Taper Ratio		0.1192
Dihedral Angle, degrees		3 at T. E.
Incidence Angle, degrees		2
Aerodynamic Twist, degrees		-4
Toe-In Angle		
Cant Angle		
Sweep Back Angles, degrees		
Leading Edge		53
Trailing Edge		0
0.25 Element Line		44.85
Chords:		
Root (Wing Sta. 0.0)		4.587
Tip, (equivalent)		0.547
MAC		3.095
Fus. Sta. of .25 MAC		10.193*
W.P. of .25 MAC		0.766
B.L. of .25 MAC		1.126
Airfoil Section		
Root		NACA-0010-64 (mod)
Tip		NACA-0010-64 (mod)
<u>EXPOSED DATA</u>		
Area		10.03
Span, (equivalent)		4.743
Aspect Ratio		2.24
Taper Ratio		0.1485
Chords		
Root		3.684
Tip		0.547
MAC		2.504
Fus. Sta. of .25 MAC		11.356
W.P. of .25 MAC		0.776
B.L. of .25 MAC		1.572

*Fuselage stations are relative to an origin 3.500 inches ahead of the nose of B19

TABLE III (CONTINUED)

MODEL COMPONENT: Canard C_L

GENERAL DESCRIPTION: Basic canard for B-15B Delta Wing Configuration

DRAWING NUMBER: WT-70-105224

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u> <u>AS BUILT</u>
Area (exposed)		<u>0.706</u>
Span (equivalent)		<u>2.576</u>
Inb'd equivalent chord		<u>1.061</u>
Outb'd equivalent chord		<u>0.099</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u> </u>	<u> </u>
At Outb'd equiv. chord	<u> </u>	<u> </u>
Sweep Back Angles, degrees		
Leading Edge		<u>57.68</u>
Tailing Edge		<u>0</u>
Hingeline	<u> </u>	<u> </u>
Area Moment (Normal to hinge line)	<u> </u>	<u> </u>
Hinge line located at 25% of M.A.C. of exposed area		

TABLE III (CONTINUED)

MODEL COMPONENT: Vertical Tail V8

GENERAL DESCRIPTION: Alternate vertical tail with NACA 0012-64 (MOD) airfoil
section.

DRAWING NUMBER: WT-71-105803 Sheet 1, Chg. Ltr. C

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u> (with cut-out as built)
Area	<u> </u>	<u>2.326 in²</u>
Span (equivalent)	<u> </u>	<u>2.007 in</u>
Inb'd equivalent chord	<u> </u>	<u>1.723 in</u>
Outb'd equivalent chord	<u> </u>	<u>0.656 in</u>
Ratio Elevator chord/horizontal tail chord		
At Inb'd equiv. chord	<u> </u>	<u>.35</u>
At Outb'd equiv. chord	<u> </u>	<u>.35</u>
Sweep Back Angles, degrees		
Leading Edge	<u> </u>	<u>35.0 Deg</u>
Tailing Edge	<u> </u>	<u>10.0 Deg</u>
Hingeline	<u> </u>	<u>20.0 Deg</u>
Area Moment (Normal to hinge line)	<u> </u>	<u> </u>

TABLE III (CONTINUED)

MODEL COMPONENT: BODY - B5

GENERAL DESCRIPTION: 9992-134B body. Delta wing orbiter body including a canopy on the upper surface aft of the nose. The model scale factor is 0.0035

DRAWING NUMBER: Lines Dwg. 9992-134B

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length , in.	<u>2120.00</u>	<u>7.420</u>
Max. Width , in.	<u>462.86</u>	<u>1.620</u>
Max. Depth , in.	<u>274.29</u>	<u>0.960</u>
Fineness Ratio	<u>5.905</u>	<u>5.905</u>
Area		
Max. Cross-Sectional, ft ² (Fus, Sta. 1215.0 to 1809.0 in.)	<u>702.75</u>	<u>0.00860</u>
Planform	<u>-</u>	<u>-</u>
Wetted	<u>-</u>	<u>-</u>
Base	<u>-</u>	<u>-</u>

TABLE III (CONTINUED)

MODEL COMPONENT: Wing-W17GENERAL DESCRIPTION: Delta wing with -5° twist and rounded wing tips. Wing blends into body. Follows NR lines drawing 9992-134D.Model Scale = 0.0035DRAWING NUMBER: 8-865-13, - 14, - 55 thru - 60DIMENSIONS: FULL-SCALE MODEL SCALETOTAL DATA

Area, ft ²		
Planform	<u>6026.60</u>	<u>0.07383</u>
Wetted		
Span (equivalent), in.	<u>1286.28</u>	<u>4.502</u>
Aspect Ratio	<u>1.802</u>	<u>1.802</u>
Rate of Taper	<u>1.723</u>	<u>1.723</u>
Taper Ratio	<u>0.094</u>	<u>0.094</u>
Diehedral Angle, degrees	<u>7.0</u>	<u>7.0</u>
Incidence Angle, degrees	<u>0.0</u>	<u>0.0</u>
Aerodynamic Twist, degrees(about T.E)	<u>-5.0</u>	<u>-5.0</u>
Toe-In Angle	<u>-</u>	<u>-</u>
Cant Angle	<u>-</u>	<u>-</u>
Sweep Back Angles, degrees		
Leading Edge	<u>60.056</u>	<u>60.056</u>
Trailing Edge	<u>0.000</u>	<u>0.000</u>
0.25 Element Line	<u>52.473</u>	<u>52.473</u>
Chords: in.		
Root (Hing Sta. 0.0)	<u>1232.91</u>	<u>4.315</u>
Tip, (equivalent) (W.S. 647.97)	<u>116.45</u>	<u>0.408</u>
MAC (W.S. 234.63)	<u>828.64</u>	<u>2.900</u>
Fus. Sta. of .25 MAC	<u>1498.52</u>	<u>5.245</u>
W.P. of .25 MAC	<u>46.27</u>	<u>0.162</u>
B.L. of .25 MAC	<u>232.88</u>	<u>0.815</u>
Airfoil Section		
Root (W.S. 241.80)	<u>NACA 0009-64</u>	
Tip (W.S. 546.07)	<u>NACA 0012-64</u>	

EXPOSED DATA

Area, ft ²	<u>2658.68</u>	<u>0.03257</u>
Span, (equivalent) in.	<u>814.61</u>	<u>2.851</u>
Aspect Ratio	<u>1.720</u>	<u>1.720</u>
Taper Ratio	<u>0.141</u>	<u>0.141</u>
Chords: in.		
Root, (Equiv.) (W.S. 237.61)	<u>823.51</u>	<u>2.882</u>
Tip, (Equiv.) (W.S. 647.97)	<u>116.45</u>	<u>0.408</u>
MAC (W.S. 391.34)	<u>558.63</u>	<u>1.955</u>
Fus. Sta. of .25 MAC	<u>1701.03</u>	<u>5.954</u>
W.P. of .25 MAC	<u>65.37</u>	<u>0.229</u>
B.L. of .25 MAC	<u>388.43</u>	<u>1.359</u>

LEADING EDGE CUFF

Planform area, ft ²	<u>46.13</u>	<u>0.00057</u>
Leading edge intersects Fus. M.L. @ Sta., in.	<u>1182.86</u>	<u>4.180</u>
Leading edge intersects wing L.E. @ Sta., in.	<u>1425.73</u>	<u>4.079</u>

TABLE III (CONTINUED)

NA-70-435
10-9-70
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11-6-70 Revision

MODEL COMPONENT: Vertical Stabilizer - V₁₇

GENERAL DESCRIPTION: Centerline vertical stabilizer with the 5° (half angle) wedge trailing edge. Used with delta wing orbiter body B₅ (configuration 9992-134B).

The model scale factor is 0.0035.

DRAWING NUMBER: S-867-47, -50

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
<u>TOTAL DATA</u>		
Area		
Planform, ft ²	667.76	0.00818
Theoretical Span, in.	380.421	
Span (equivalent), in.	377.52	1.321
Aspect Ratio	1.482	1.482
Rate of Taper	0.718	0.718
Taper Ratio	0.305	0.305
Dihedral Angle, degrees	-	-
Incidence Angle, degrees	-	-
Aerodynamic Twist, degrees	-	-
Toe-In Angle, degrees	0.0	0.0
Cant Angle, degrees	0.0	0.0
Sweep Back Angles, degrees		
Leading Edge	45.0	45.0
Trailing Edge	15.734	15.734
0.25 Element Line	39.367	39.367
Chords: Theoretical Tip, in.	117.053	
Root W.P. 274.29, in.	390.29	1.366
Tip, (equivalent), (W.P. 646.90 in), in.	119.13	0.417
MAC (W.P. 428.19 in.), in.	270.76	0.976
Fus. Sta. of .25 MAC, in.	2034.10	7.119
W.P. of .25 MAC, in.	429.55	1.503
B.L. of .25 MAC, in.	0.0	0.0
Airfoil Section, Wedge shape with L.E.R. and Flat T.E.		
L.E. Radius, in. (1.6% chord)	6.29	0.022
<u>EXPOSED DATA</u>		
Area		
Span, (equivalent)		
Aspect Ratio		
Taper Ratio		
Chords		
Root		
Tip		
MAC		
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
B.L. of .25 MAC		

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PLOTTED COEFFICIENTS SCHEDULE:

A: CN, CAF, CIM, XCP/L, CAB CIMALP, CNALPH versus α	D: DCIM, DCN, DCAF versus α
B: CIMALP($\alpha=0$), CNALPH($\alpha=0$), CN($\alpha=0$), CIM($\alpha=0$), CAF($\alpha=0$) versus Mach	E: CY, CBL, CYN, CYBETA, DCBLDB, DCYNDB versus β
C: CY, CBL, CYN versus α	F: CYBETA, DCBLDB, DCYNDB versus Mach

MODEL FIGURES

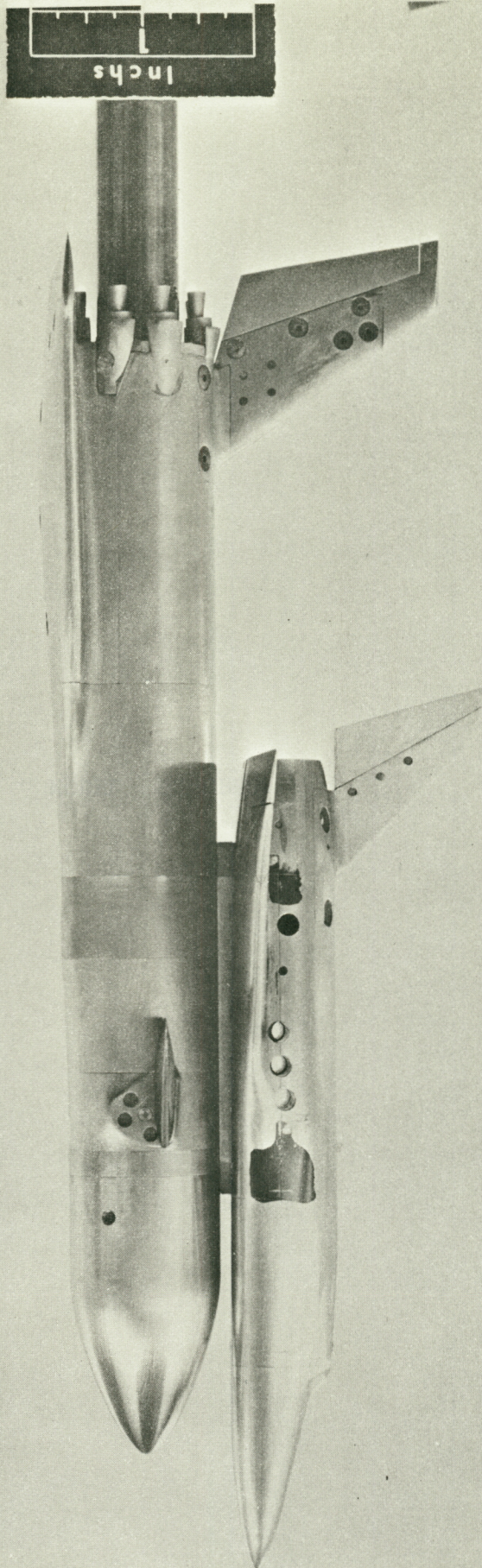


Figure 1. Photograph of Launch Configuration, Orbiter in Position 1 (Baseline - Piggyback)

1
Inches

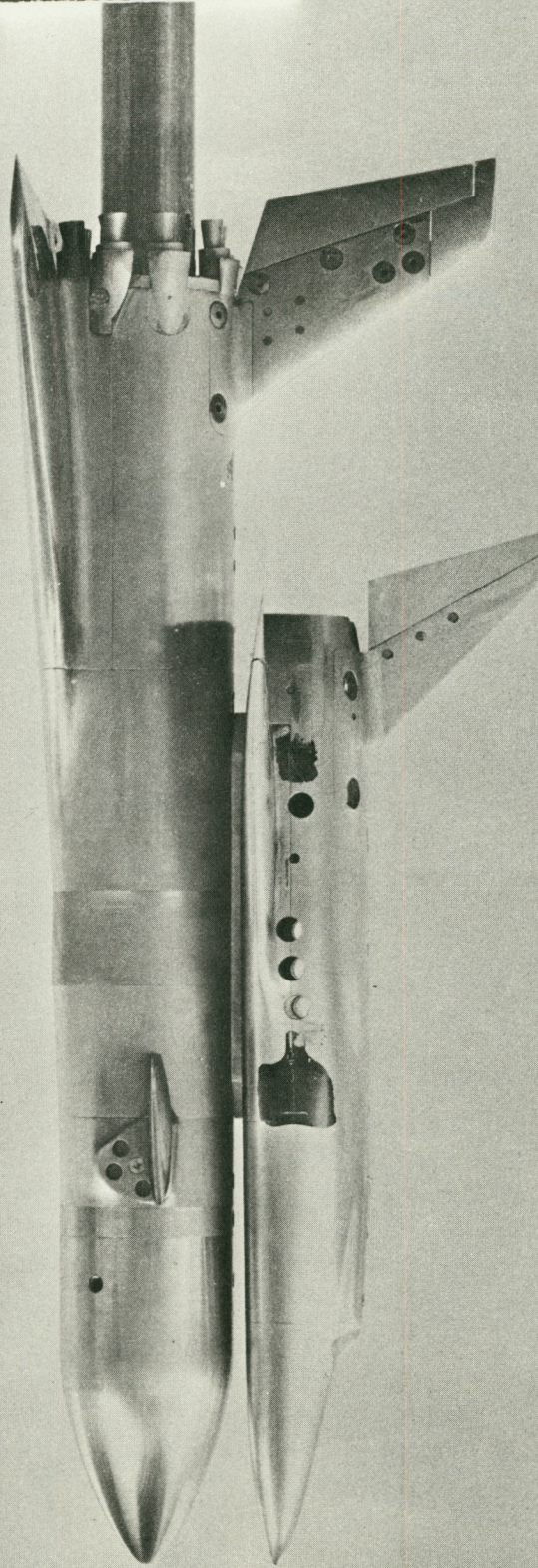


Figure 2. Photograph of Launch Configuration, Orbiter in Position 2

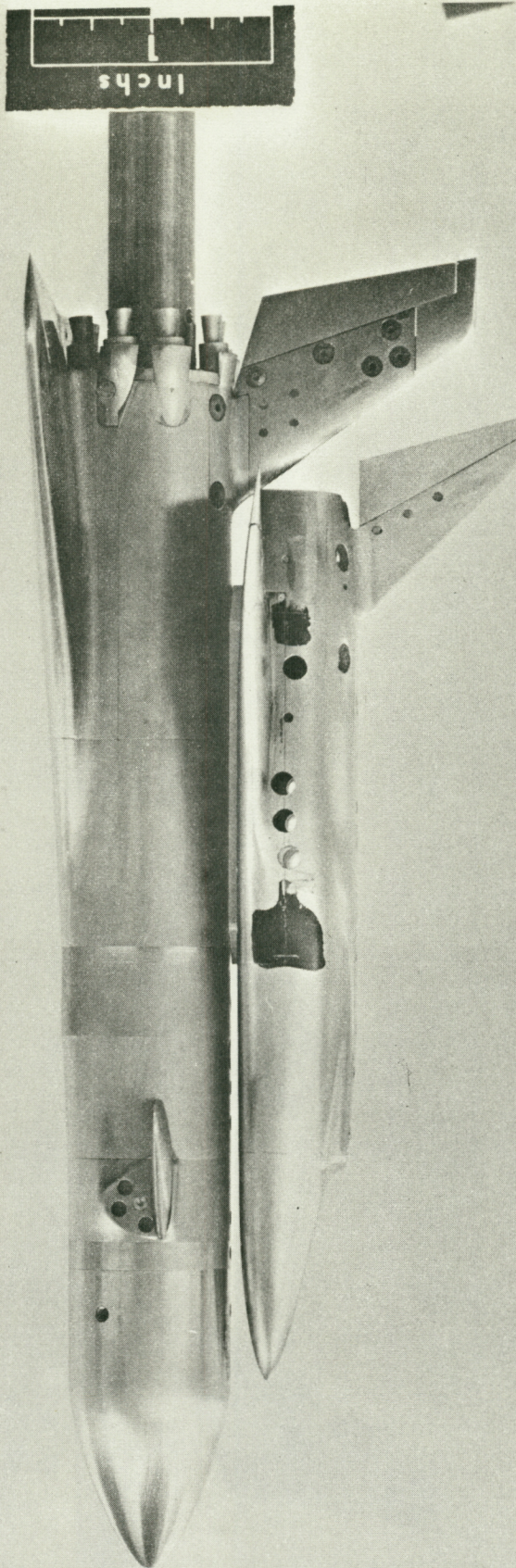


Figure 3. Photograph of Launch Configuration, Orbiter in Position 3

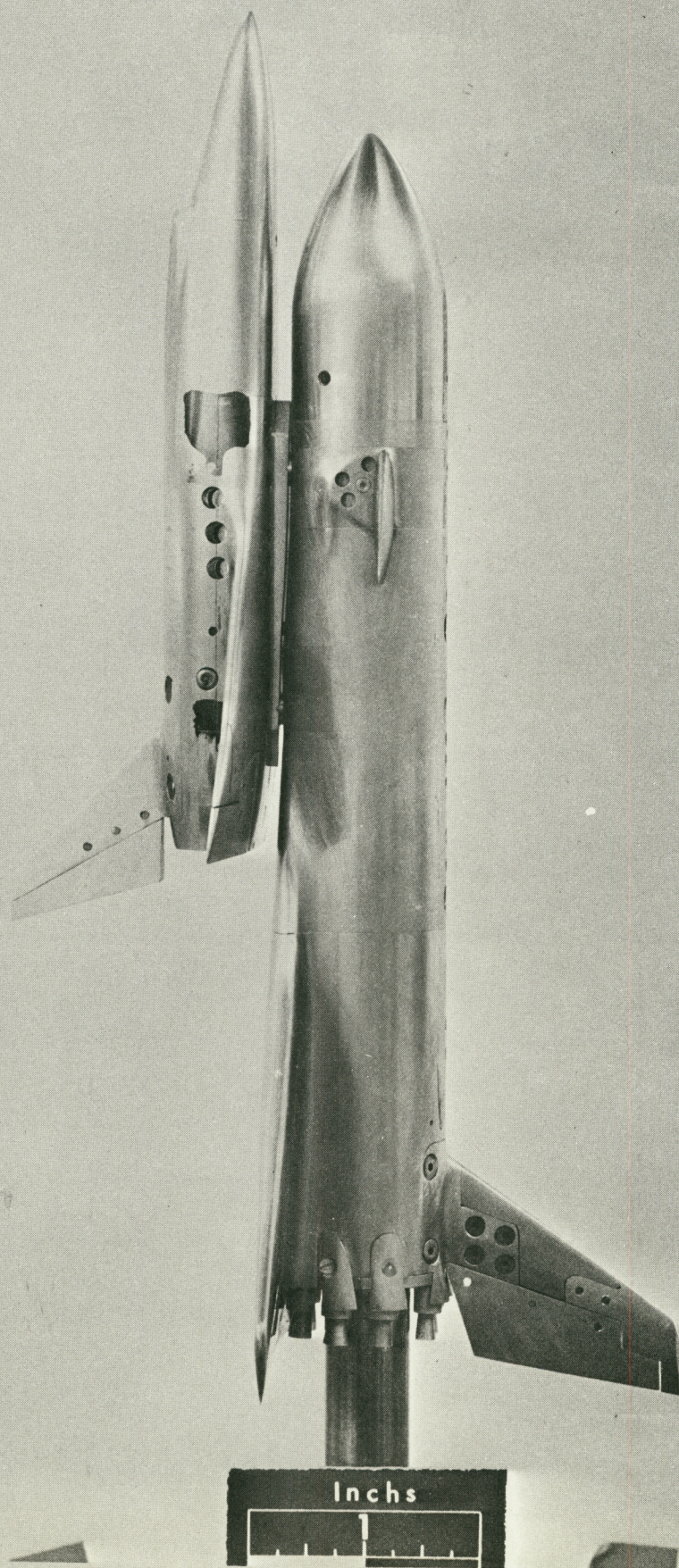


Figure 4. Photograph of Launch Configuration, Orbiter in Position 4 (Baseline - Belly-to-Belly)

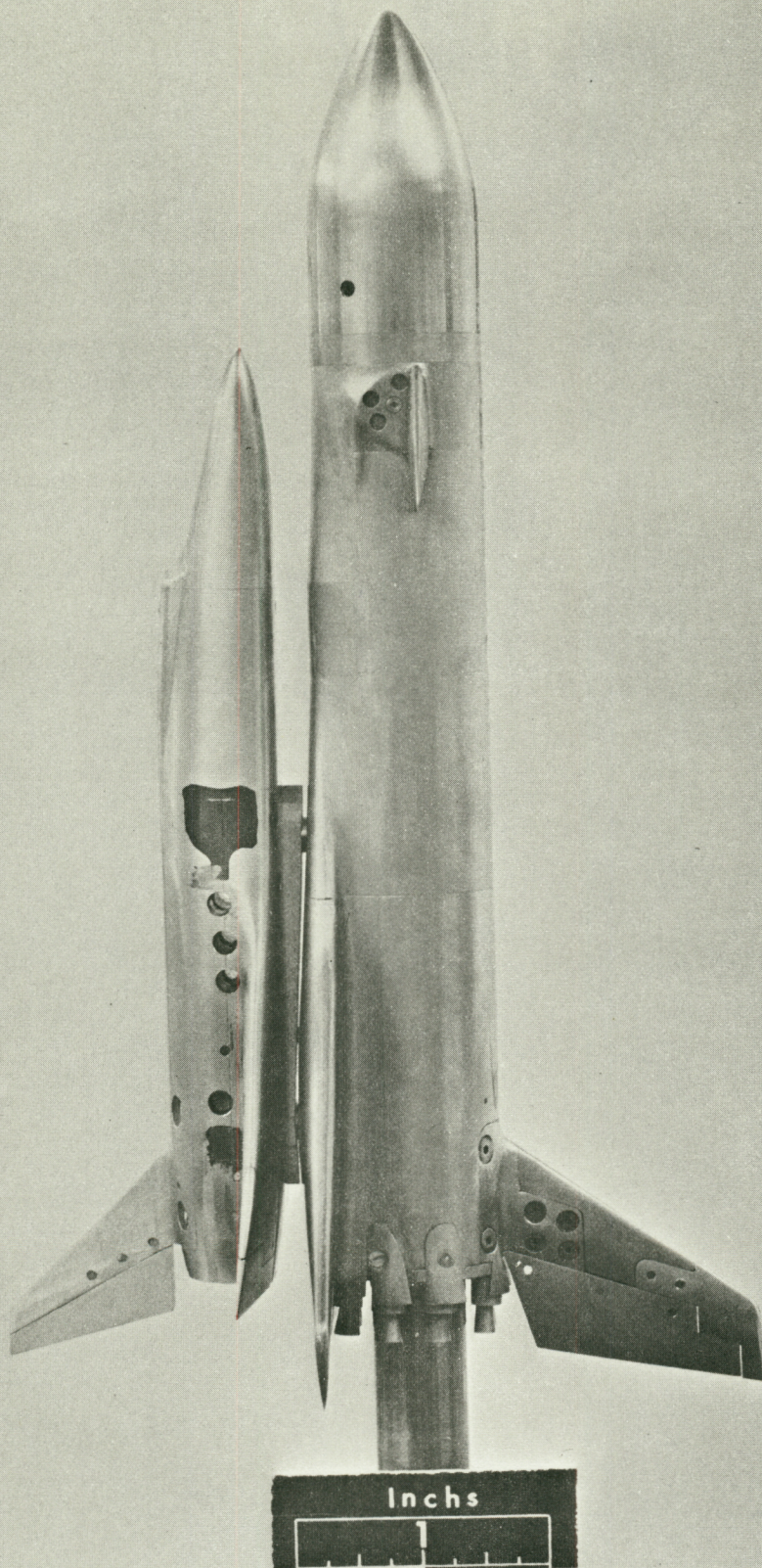


Figure 5. Photograph of Launch Configuration, Orbiter in Position 5

SSV LAUNCH CONFIGURATION

P188V Back .. Baseline
(Position 1)

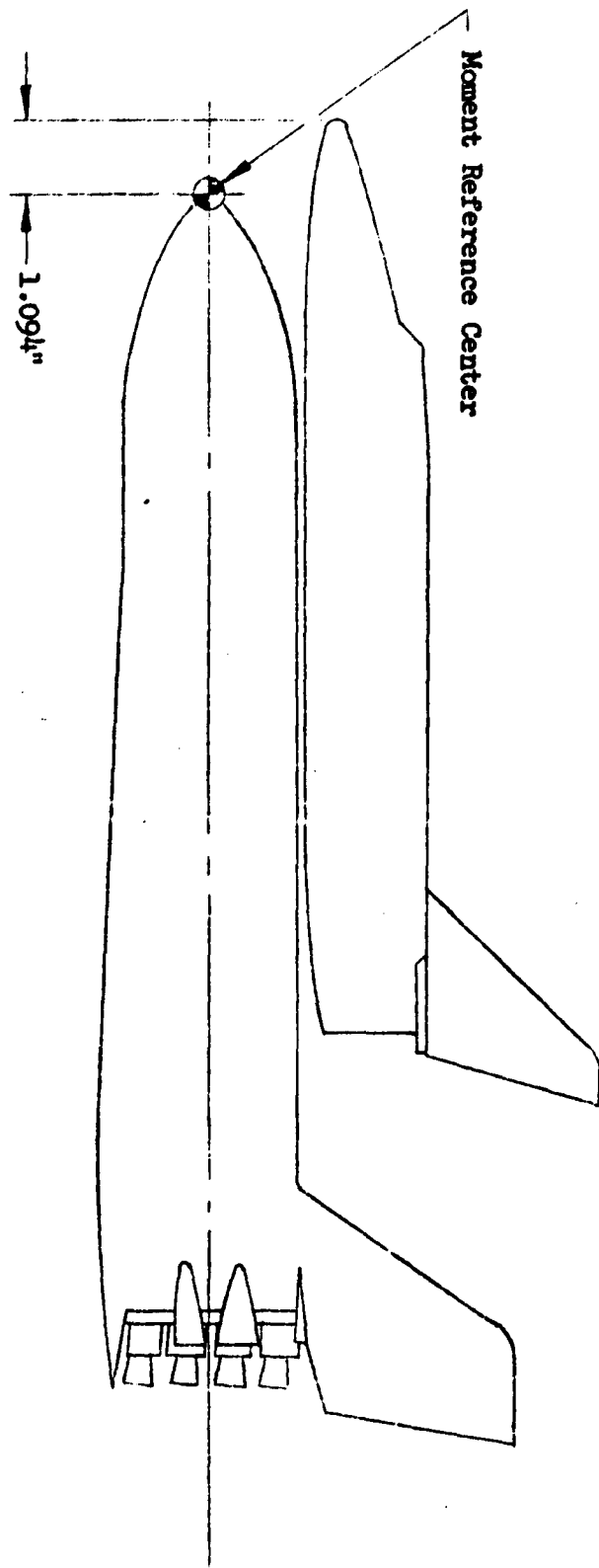


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS

SSV LAUNCH CONFIGURATION

Piegy Back - Nose To Nose
(Position 2)

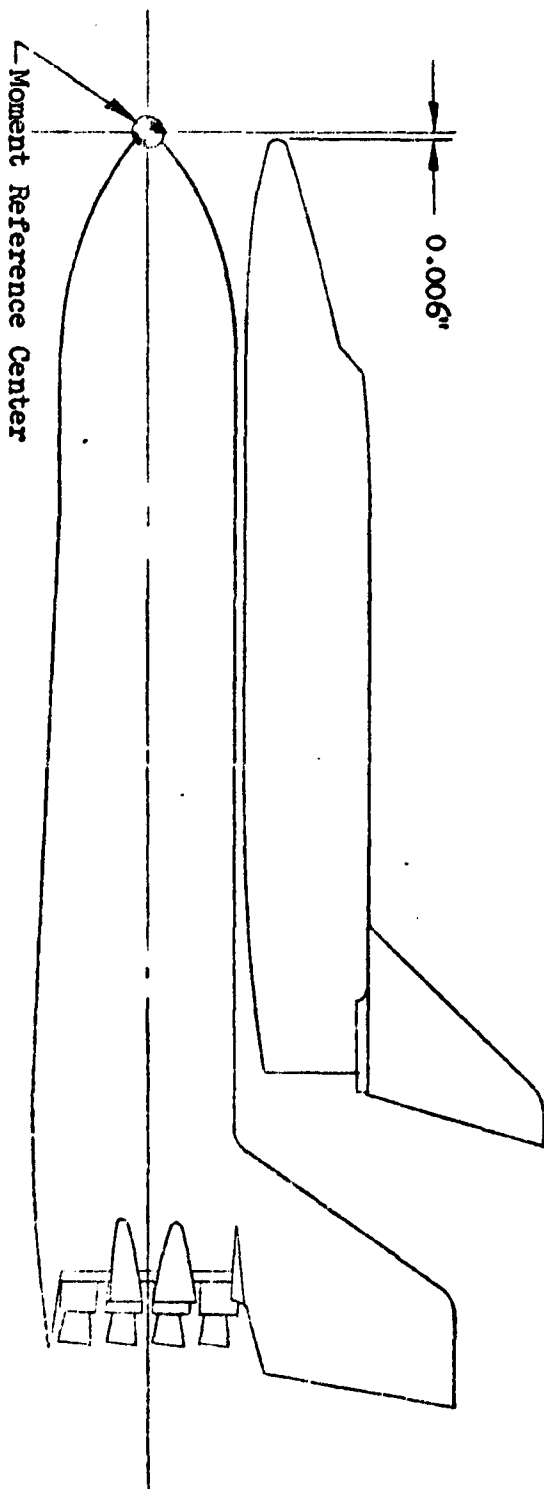


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

SSV LAUNCH CONFIGURATION

Piggy Back - Orbiter Att
(Position 3)

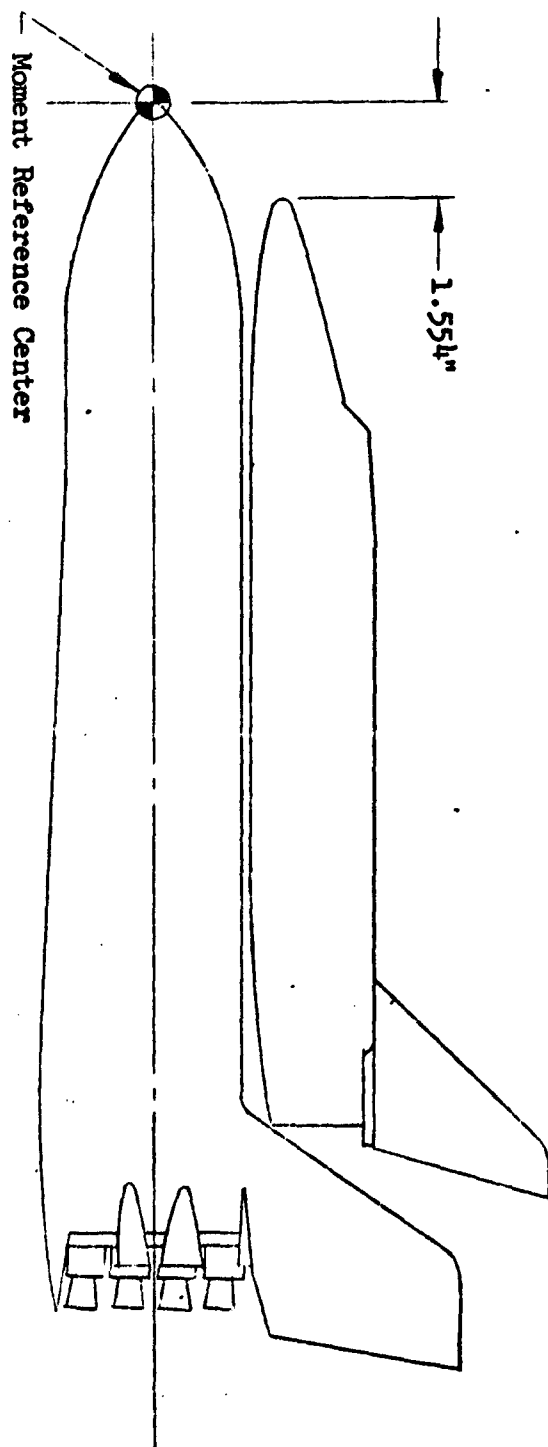


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

SSV LAUNCH CONFIGURATION

Belly To Belly - Baseline
(Position 4)

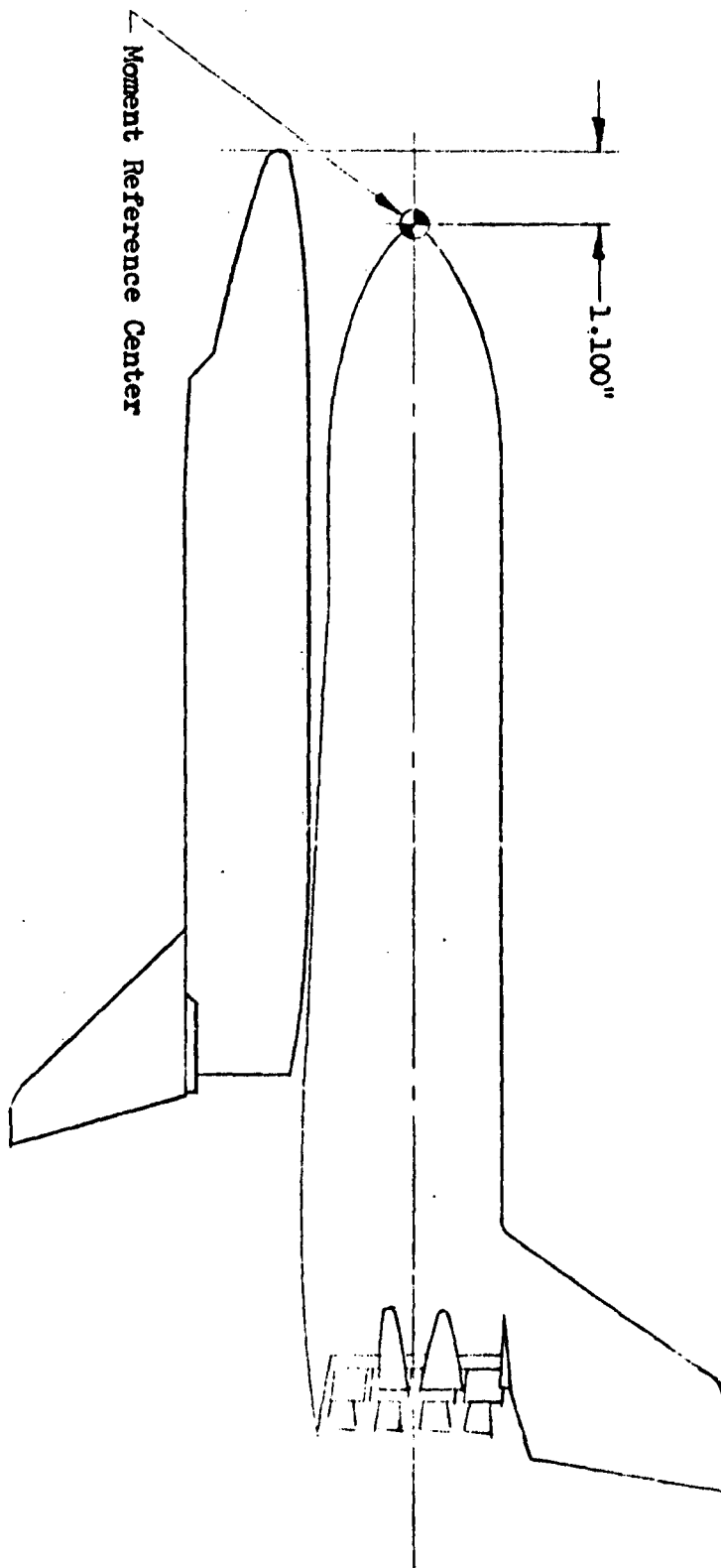


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

SSV LAUNCH CONFIGURATION

Belly To Belly - Art
(Position 5)

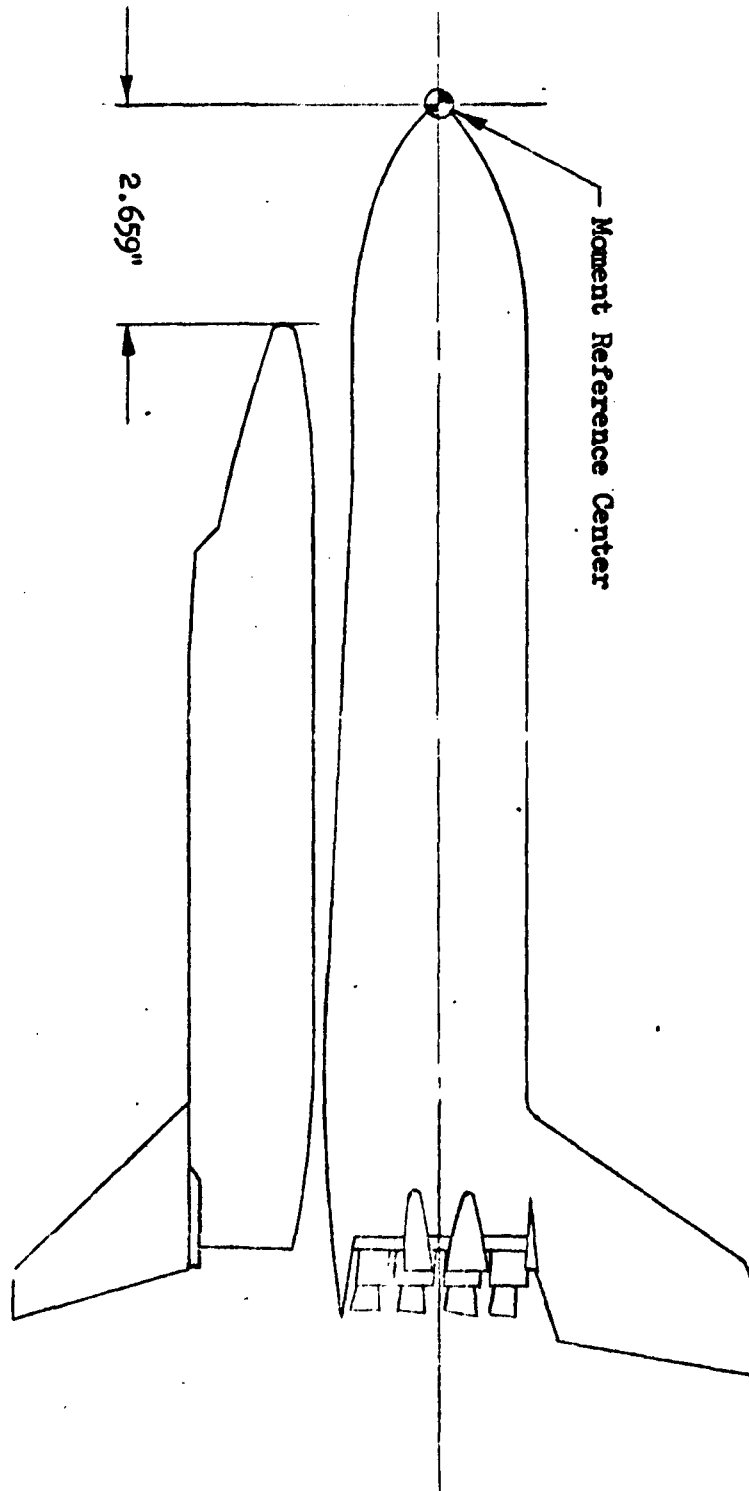


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

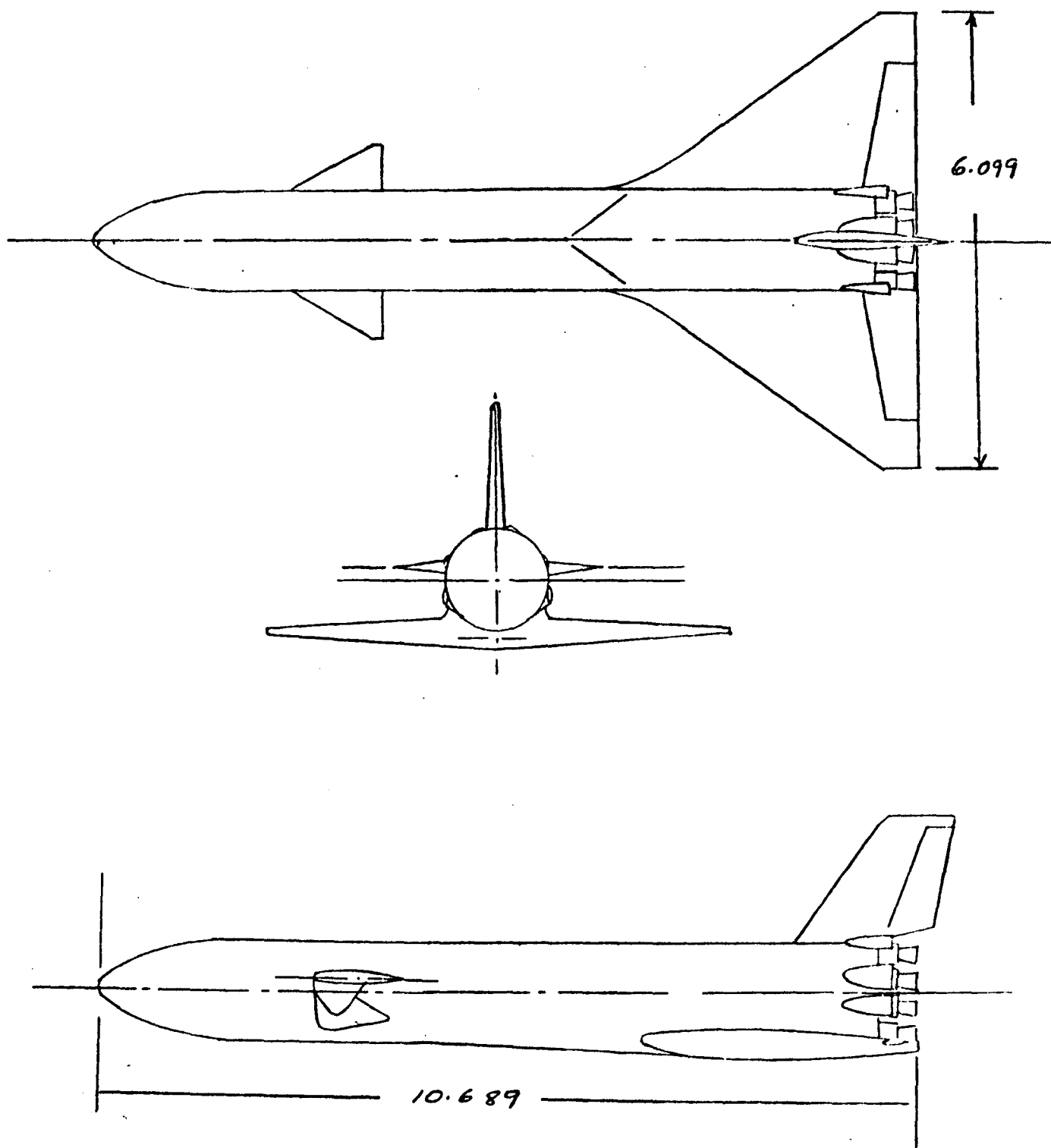
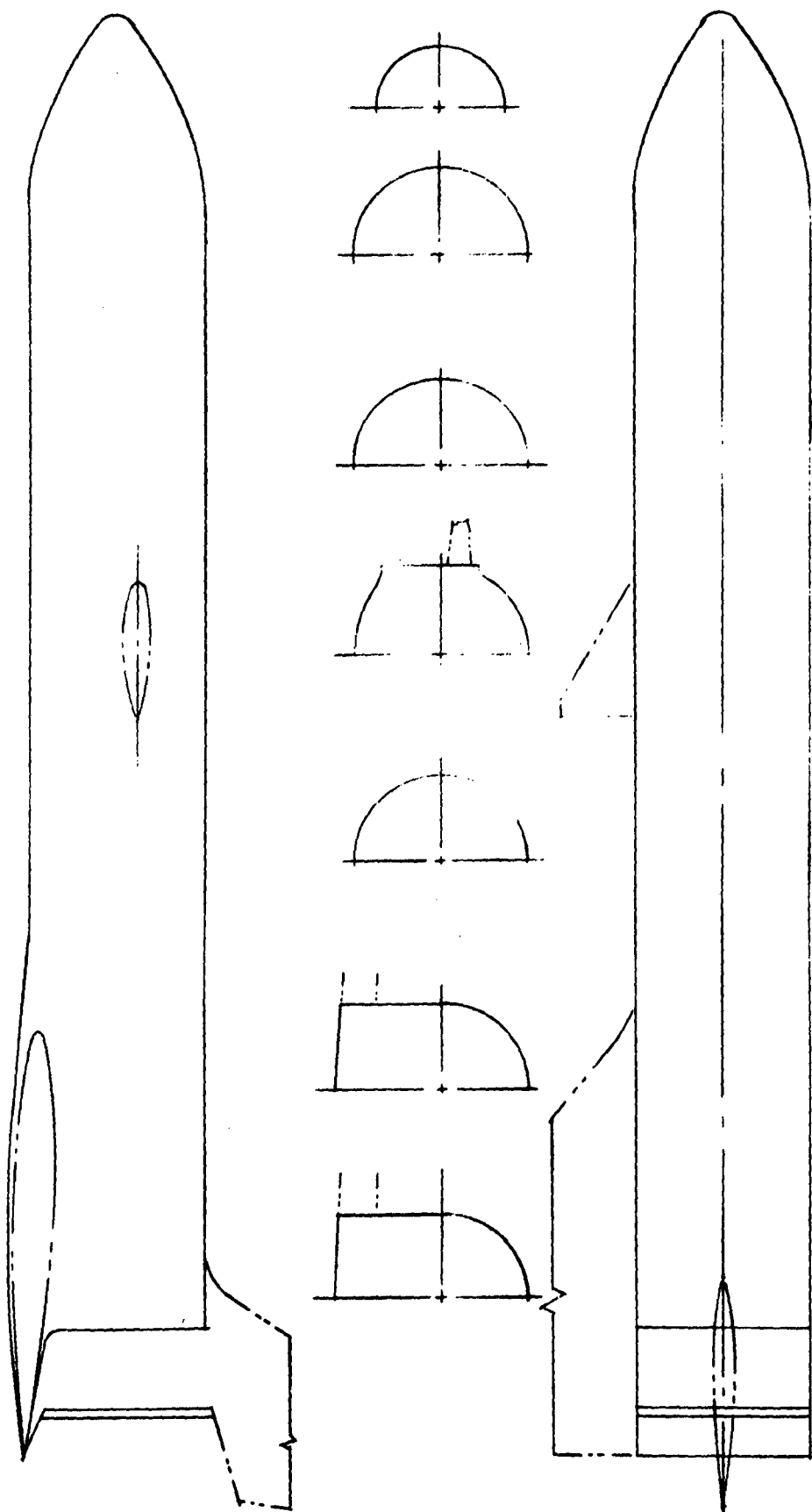


FIGURE 7. THREE-VIEW SKETCH OF BOOSTER $B_{20}W_{14}C_{48}V_8$

Figure 8.
BODY B20 - BOOSTER B-15 B-1 (LENGTHENED 10%) CONFIGURATION



MODEL DESCRIPTION

Delta Wing Booster - (Cont'd)

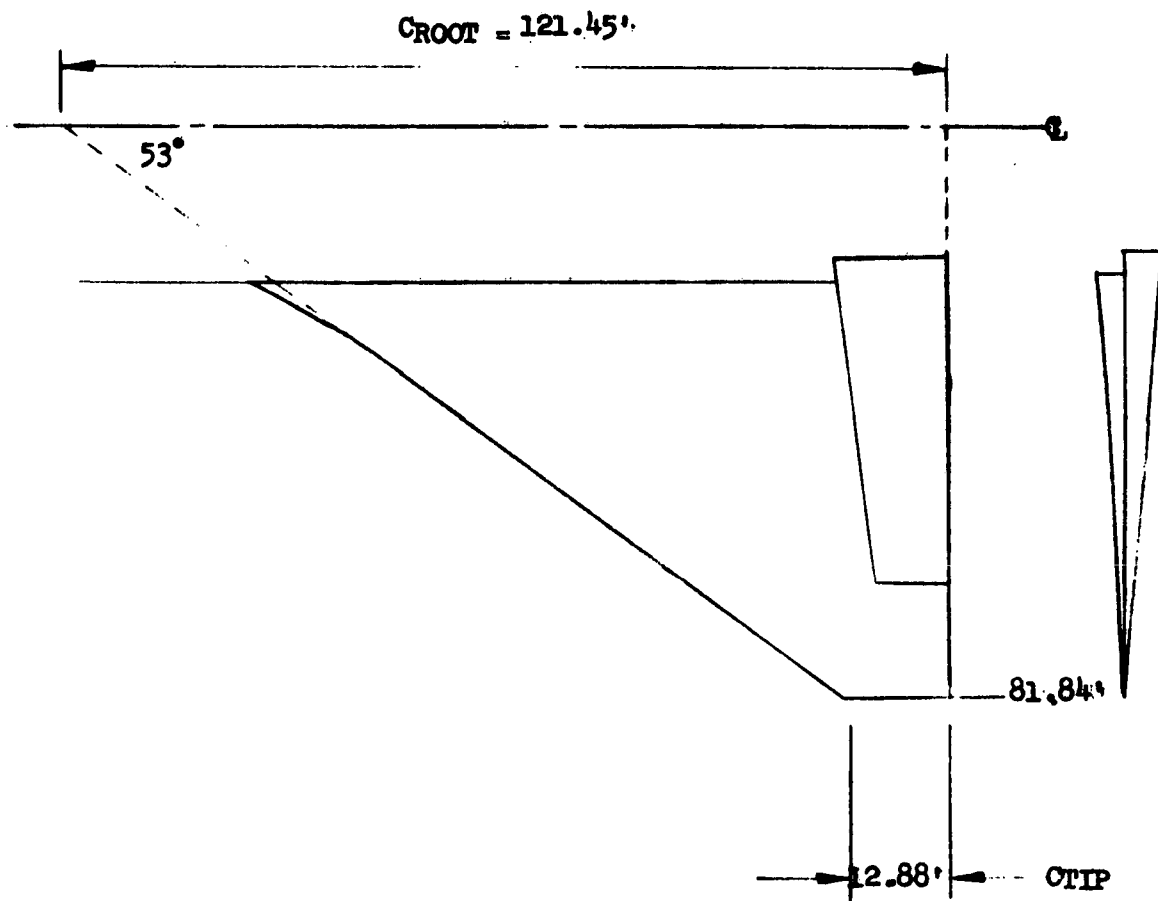


FIGURE 9. WING W₁₄ - BOOSTER CONFIGURATION

LOS ANGELES DIVISION
NORTH AMERICAN ROCKWELL CORPORATION

MODEL DESCRIPTION

Delta Wing Booster - (Cont'd)

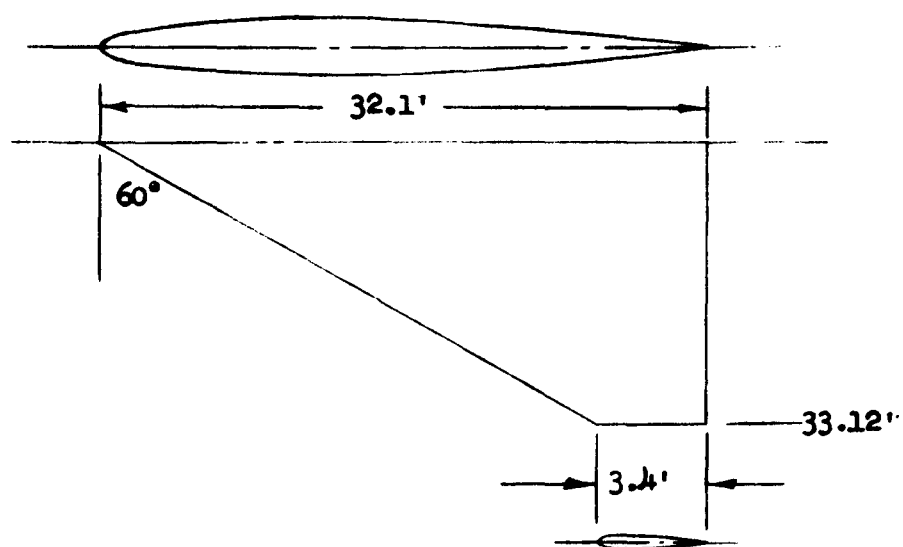


FIGURE 10. CANARD - C4

LOS ANGELES DIVISION
NORTH AMERICAN ROCKWELL CORPORATION

MODEL DESCRIPTION

Delta Wing Booster - (Cont'd)

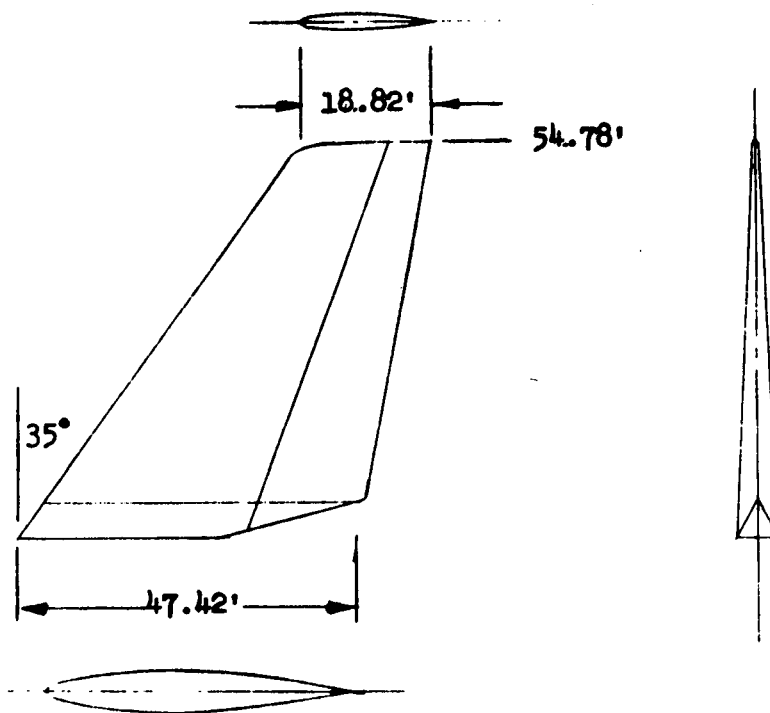
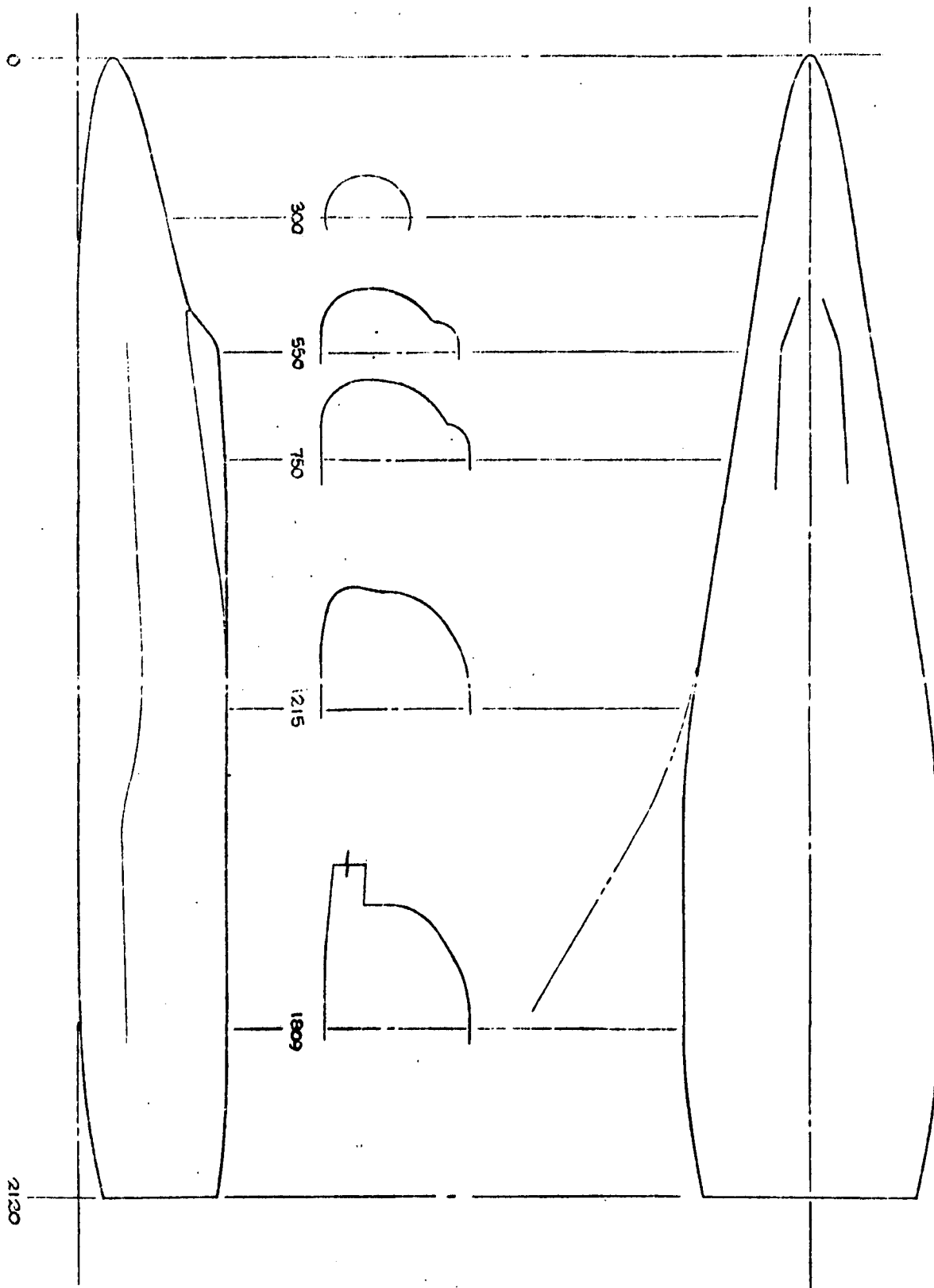


FIGURE 11. VERTICAL TAIL - V8

FIGURE 12. BODY 25 9902-134B CONFIGURATION



LOS ANGELES DIVISION
NORTH AMERICAN ROCKWELL CORPORATION

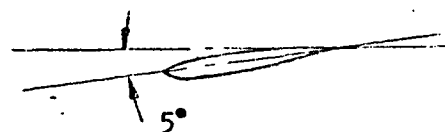
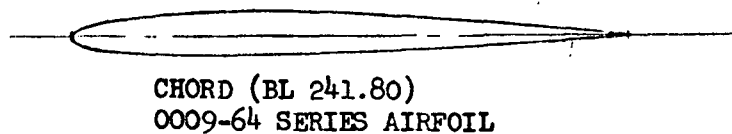
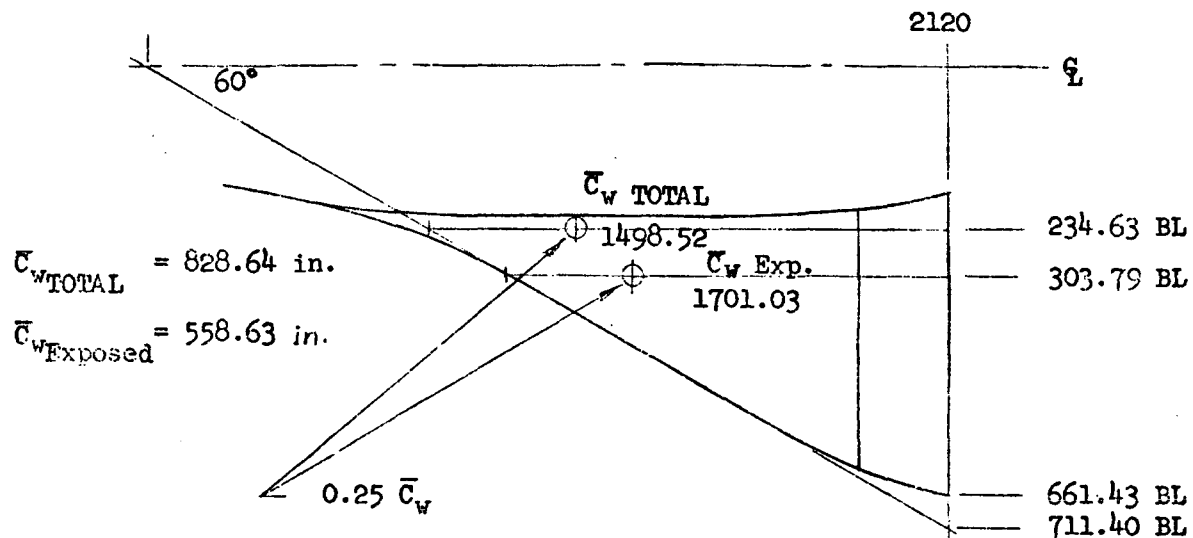


FIGURE 13. WING W_{17} 9992-134 D Configuration

LOS ANGELES DIVISION
NORTH AMERICAN ROCKWELL CORPORATION

MODEL DESCRIPTION - CONTINUED
Dimensional Data - Continued
Delta Wing Orbiter - Continued

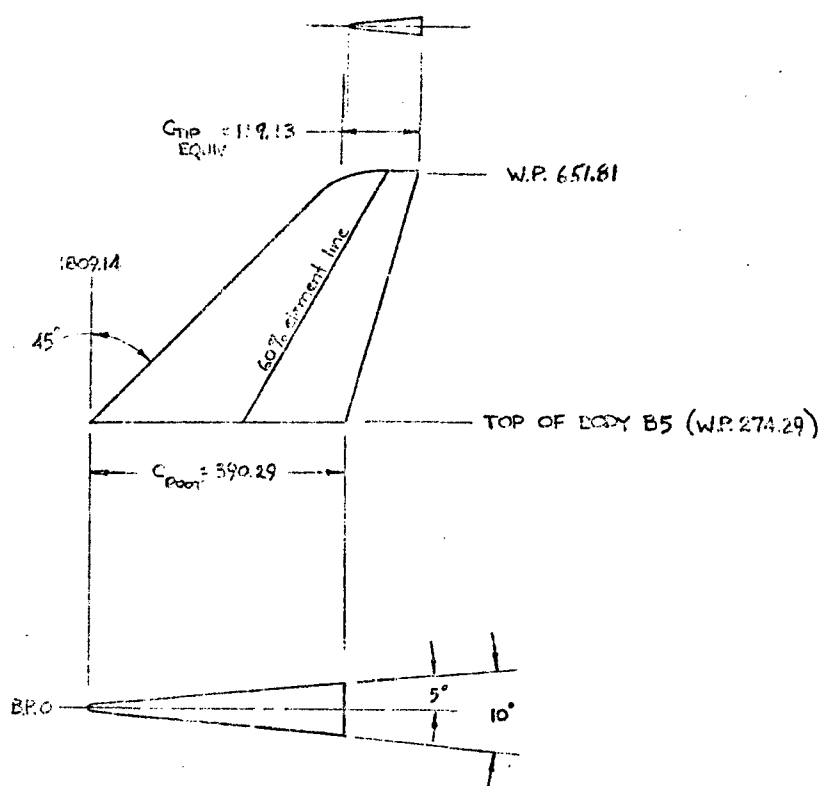
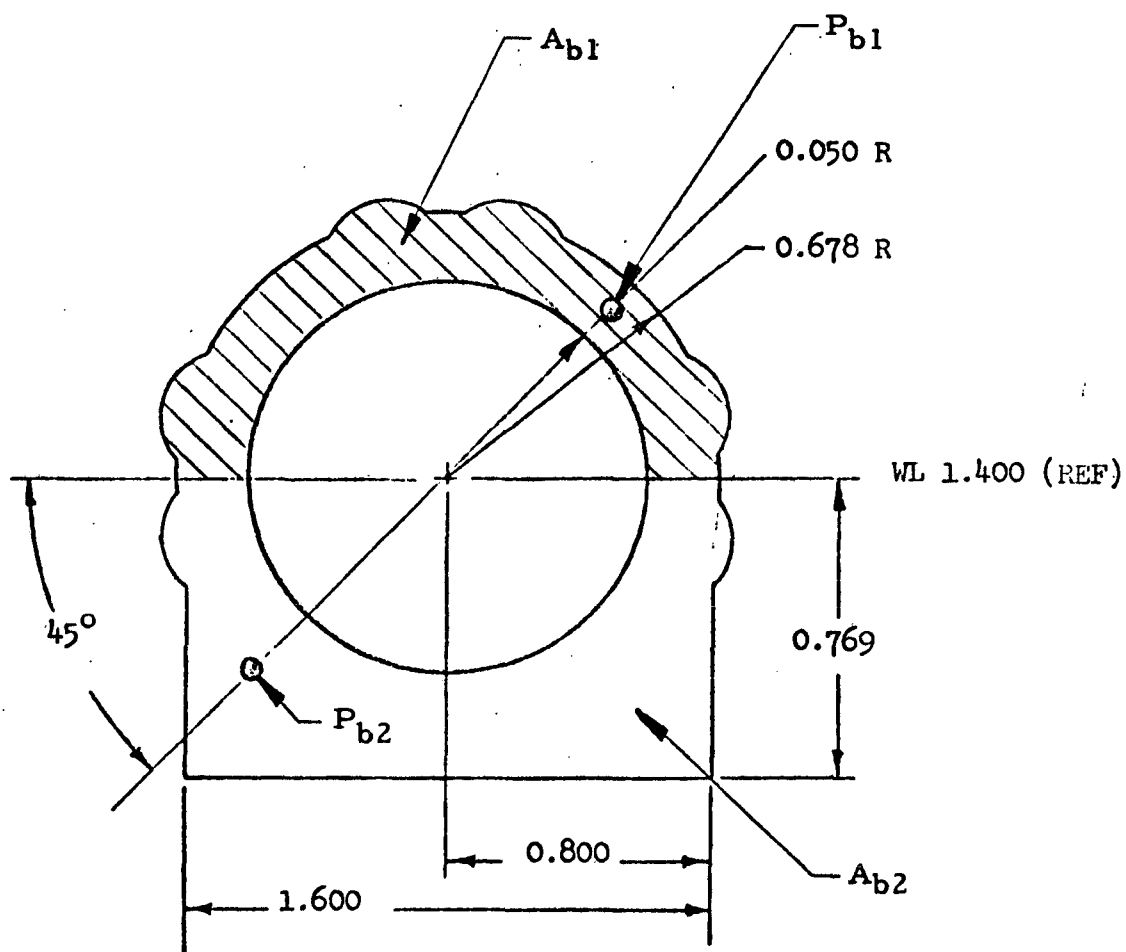


FIGURE 14.
VERTICAL STABILIZER V17



View Looking Forward

NOTE: Location of pressure taps may vary slightly as installation will be made during test setup.

FIGURE 15. BOOSTER BASE PRESSURE ORIFICE LOCATIONS

- Notes:
1. Positive directions of force coefficients moment coefficients, and angles are indicated by arrows.
 2. For clarity, origins of wind and stability axes have been displaced from the center of gravity.

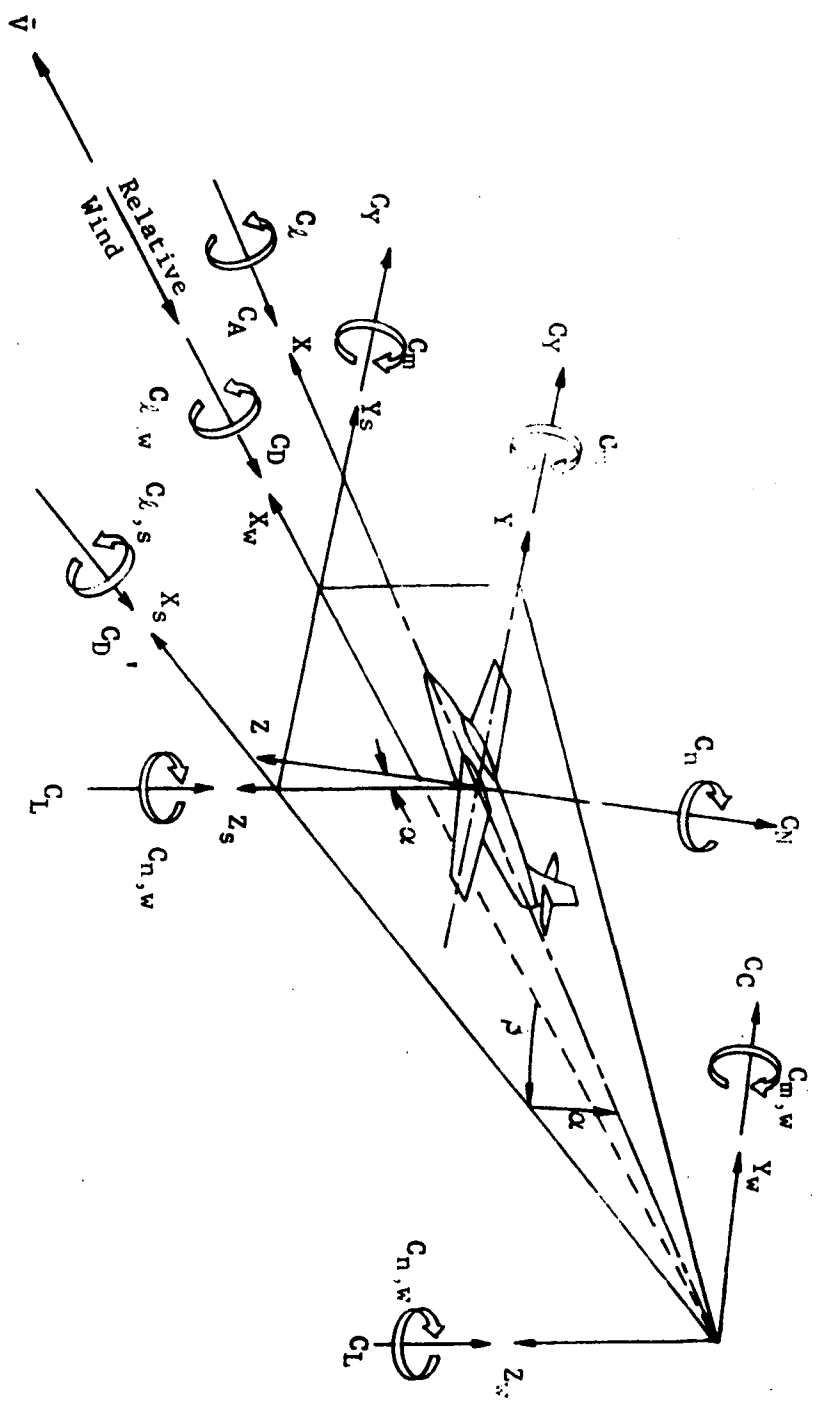
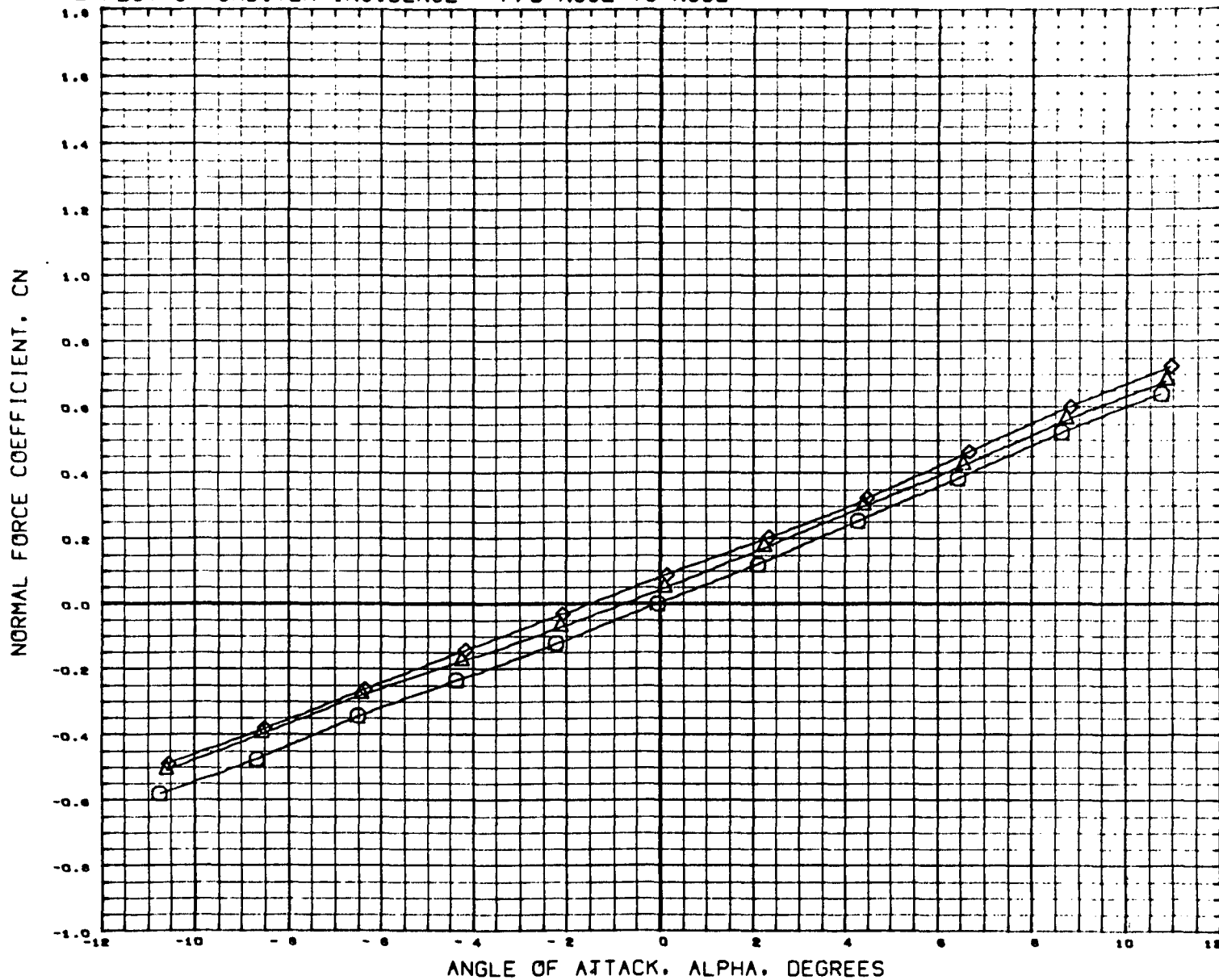


Figure 16. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle

D A T A F I G U R E S

Tabulations of the plotted data and corresponding source data are available from SADSAC Operations.

EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

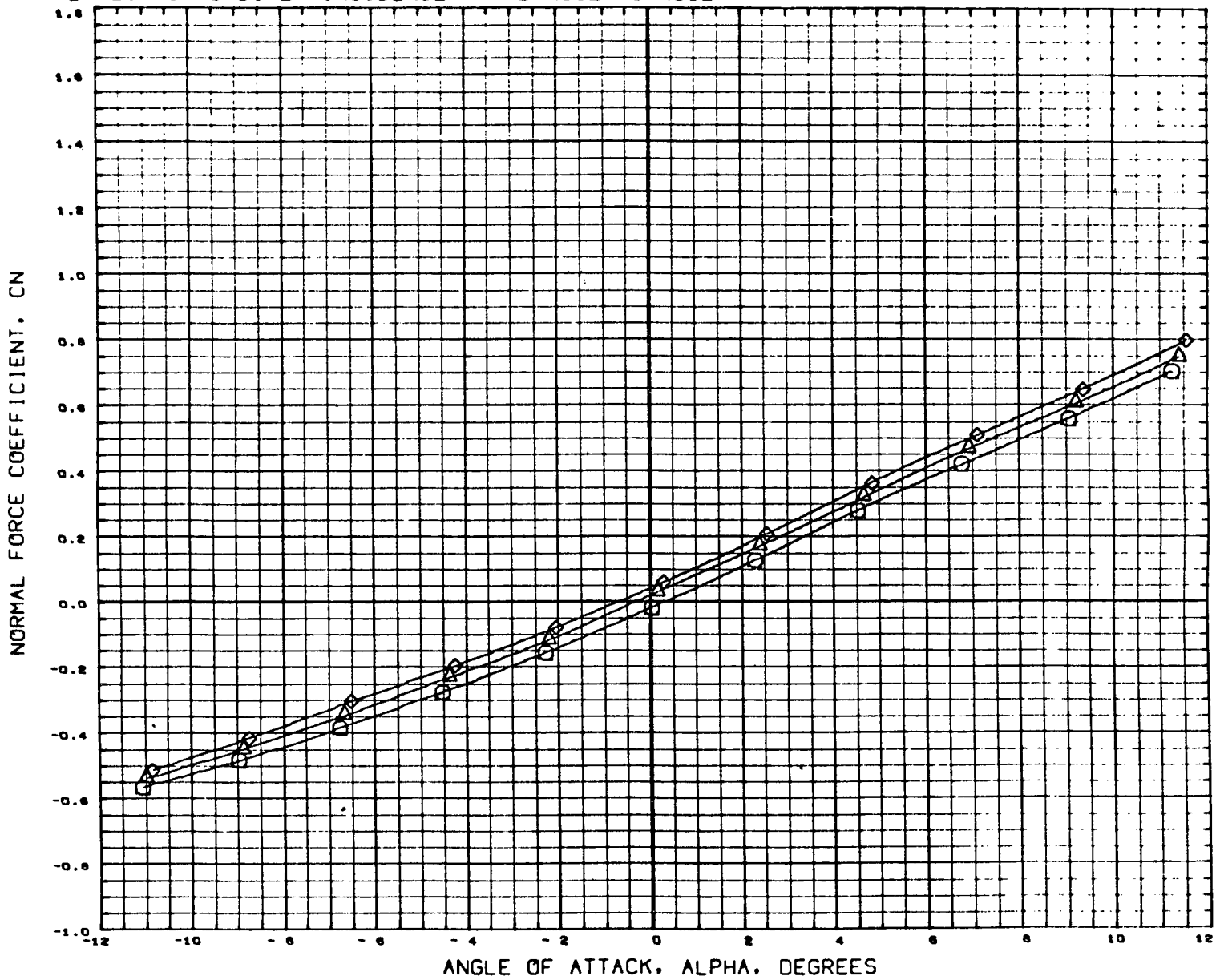


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H323BA)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 SQ IN
(H323BA)	MSFC490 NR/GD LAUNCH B2024BW14V8+C5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3240A)	MSFC490 NR/GD LAUNCH B2014CW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0950 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

PAGE 1

EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

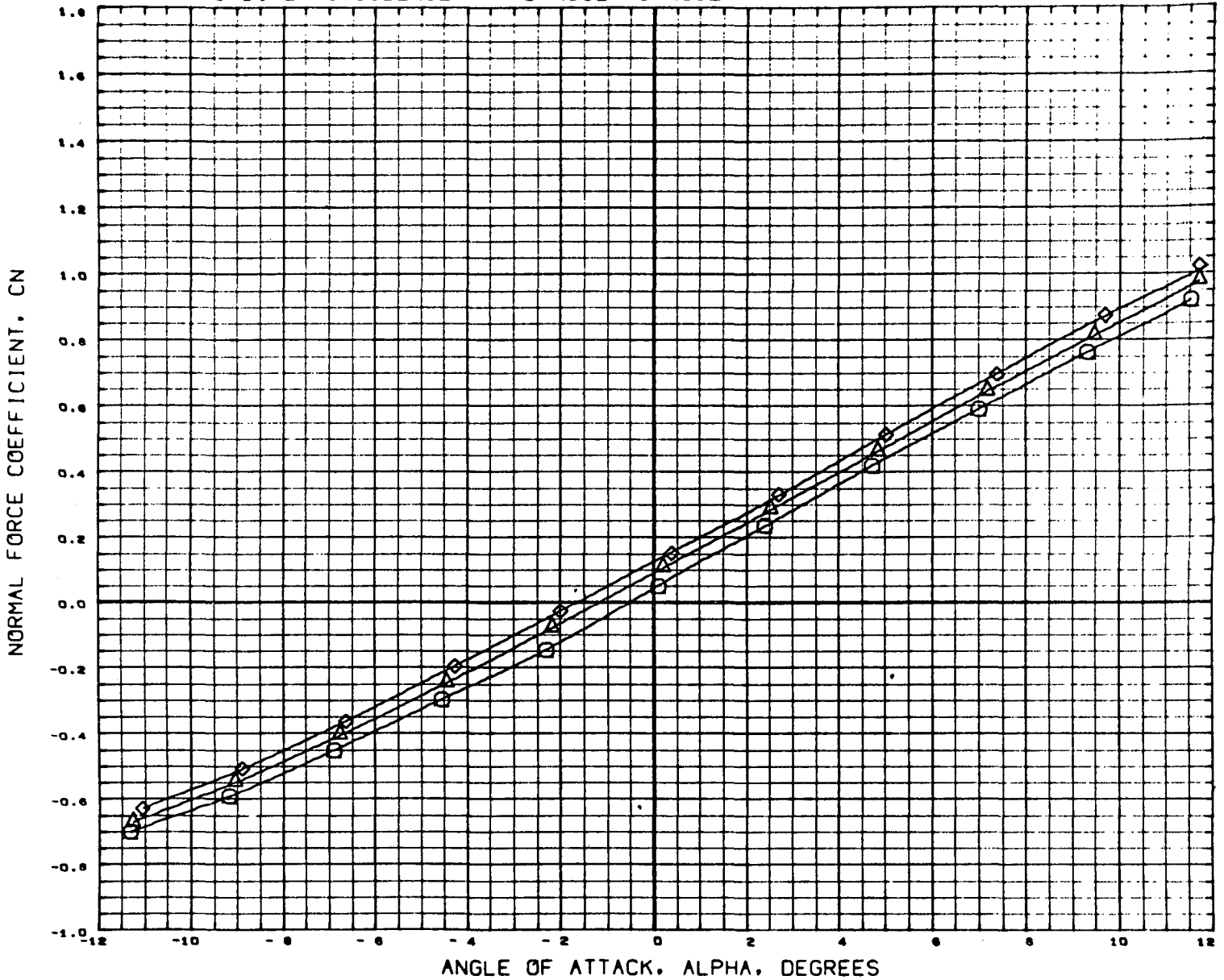


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
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MACH .90

PAGE 2

EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

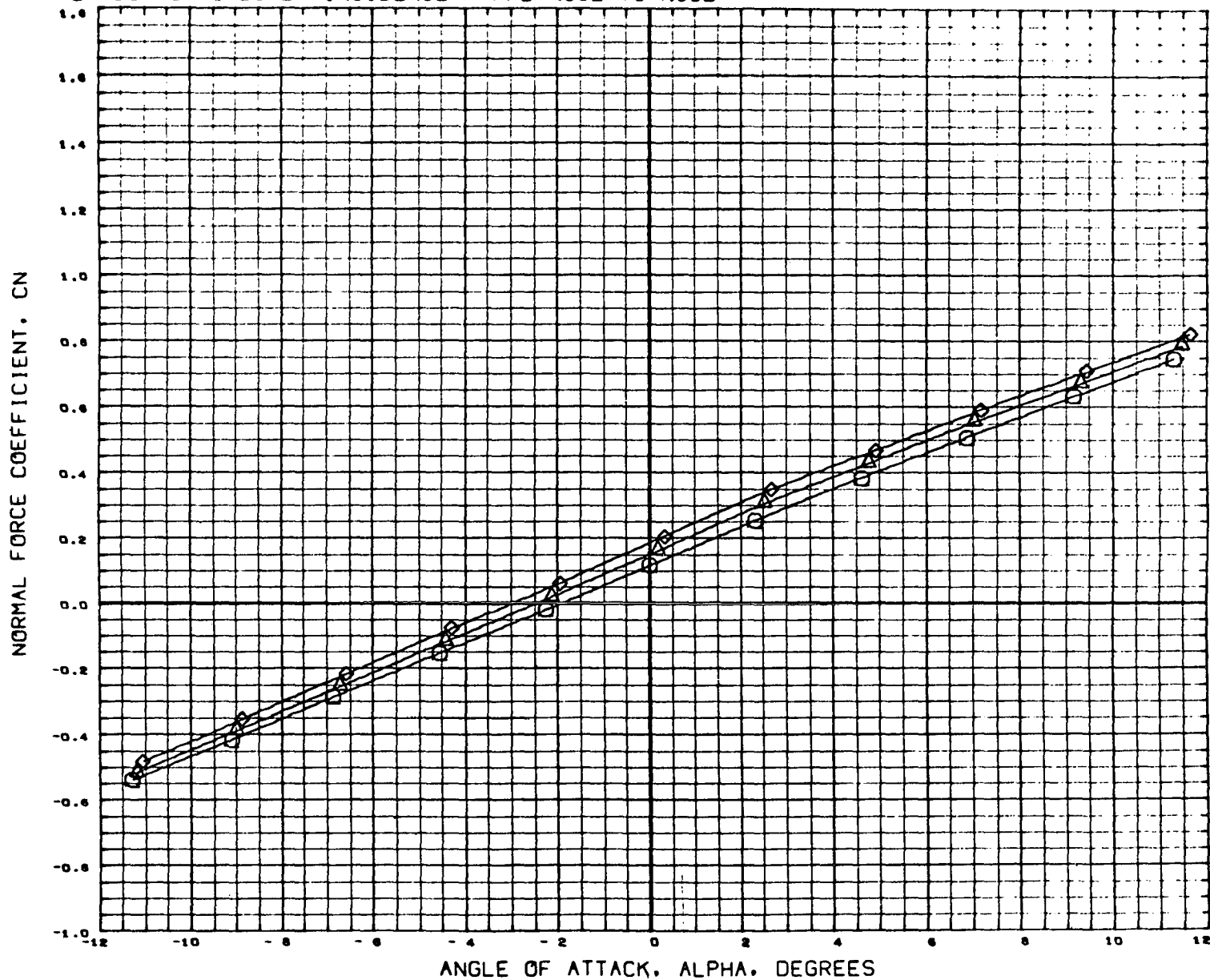


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(H3239A)	M3FC490 NR/GD LAUNCH B20248W14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
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MACH 1.10

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

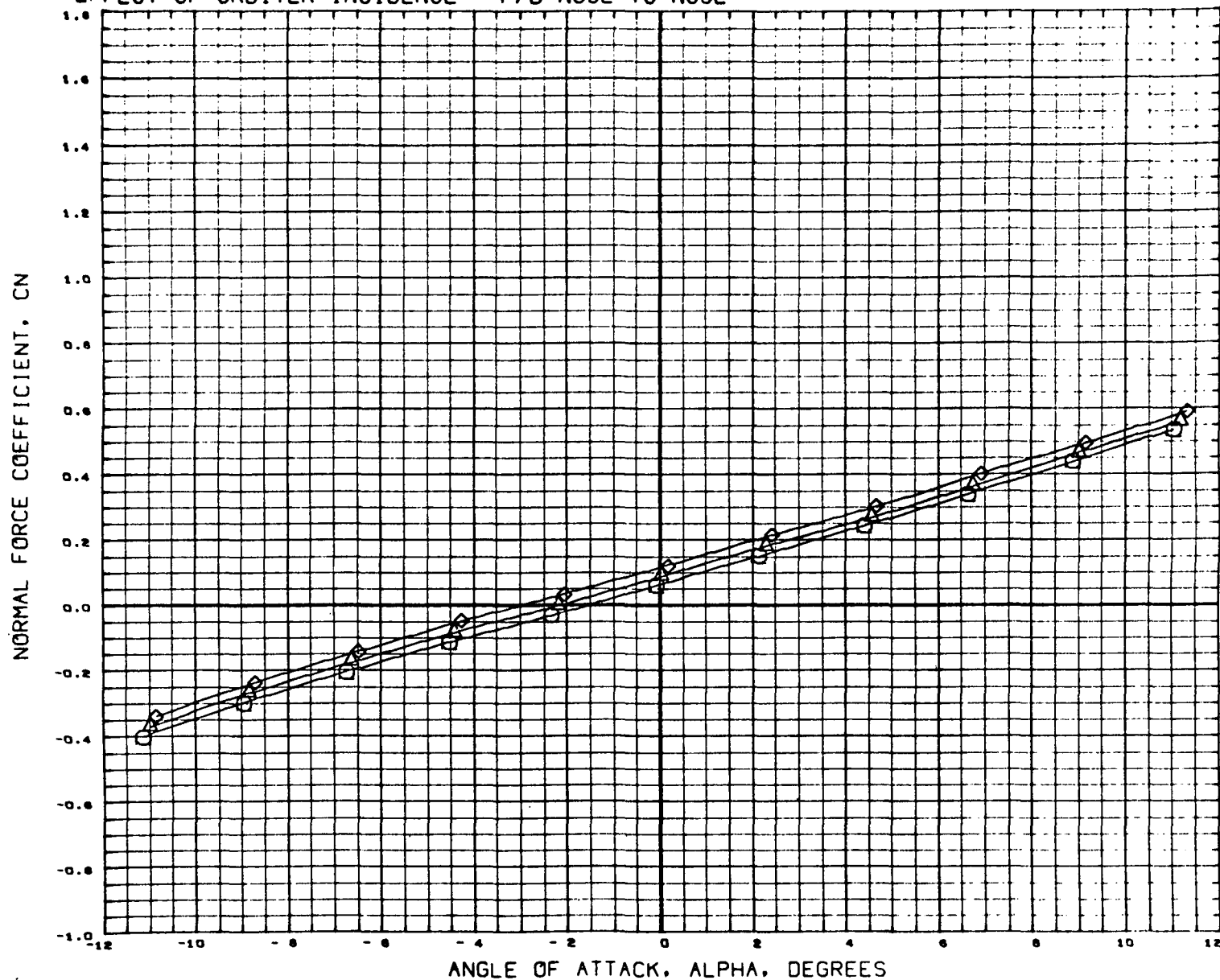


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(H3239A) △	MSFC490 NR/GD LAUNCH 02024BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0990 INCHES
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MACH 1.47

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

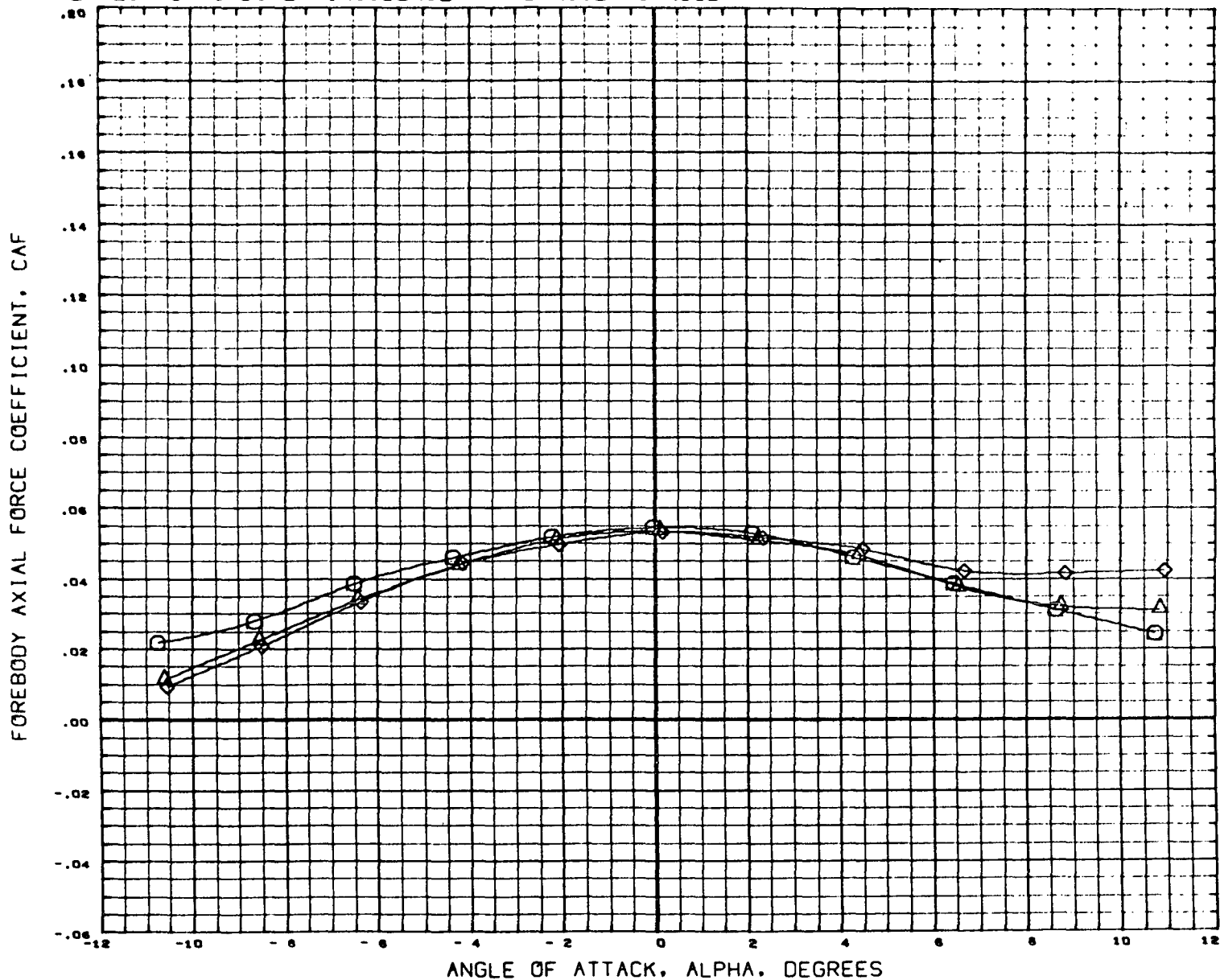


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
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MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

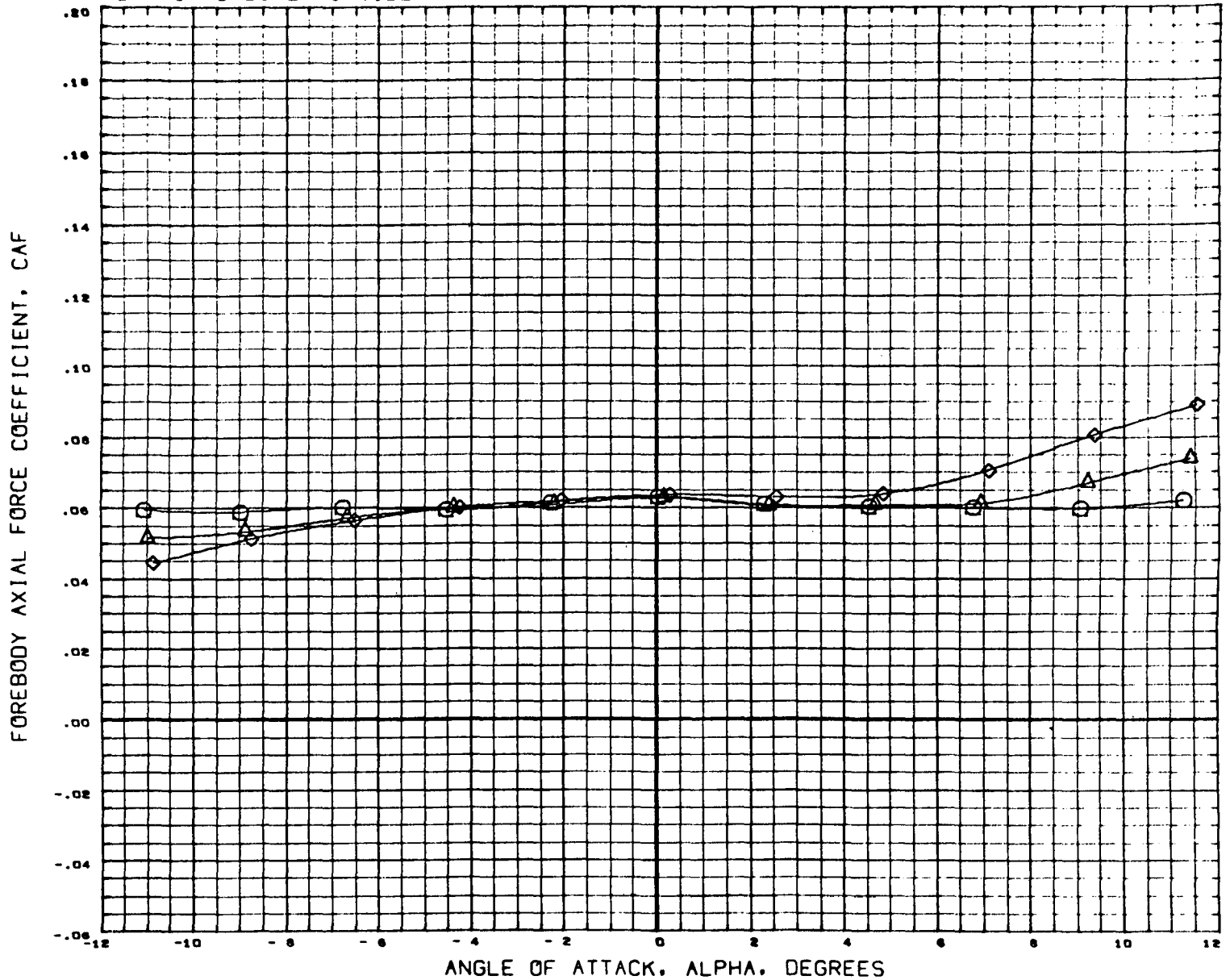


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MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

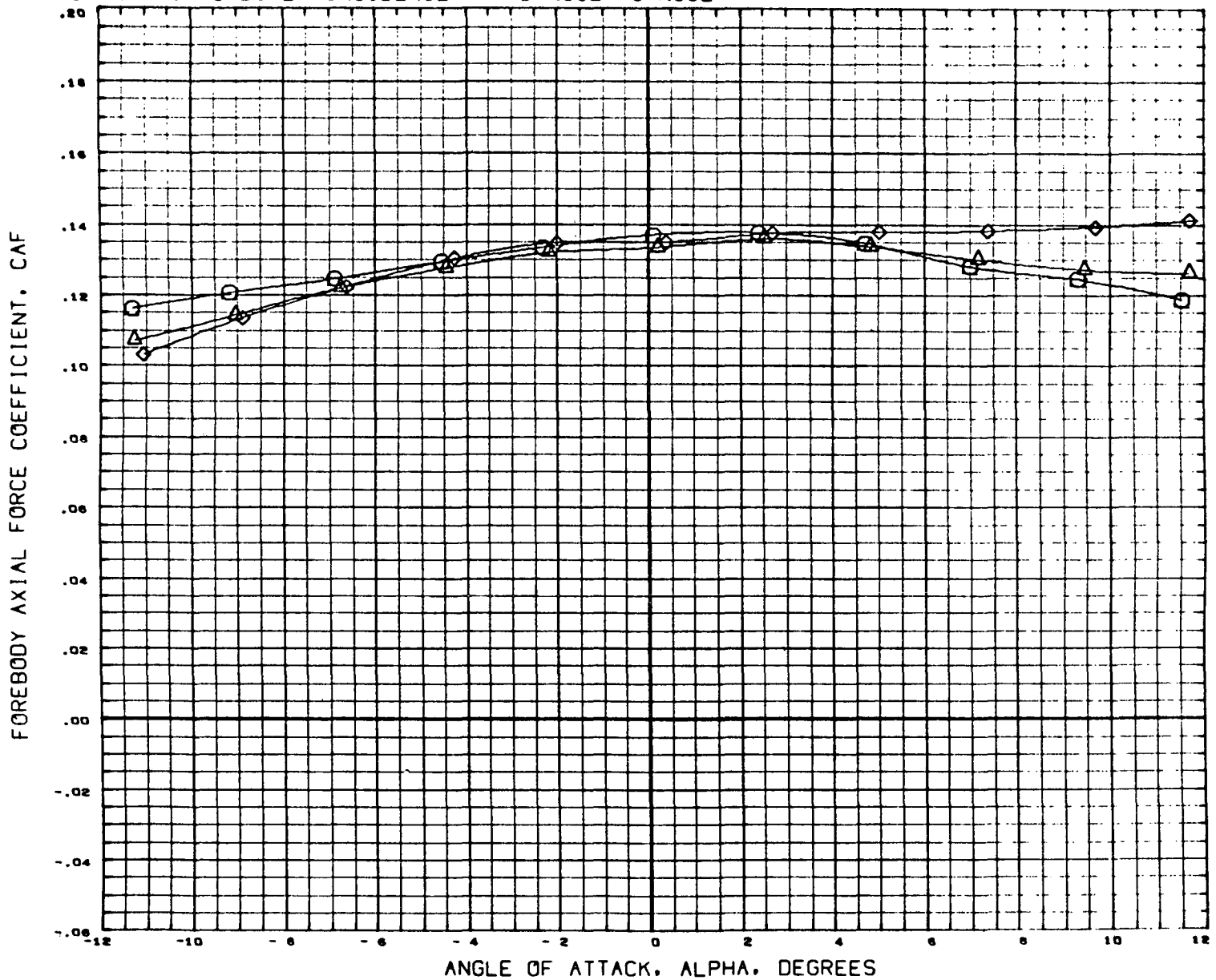


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V6+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
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MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
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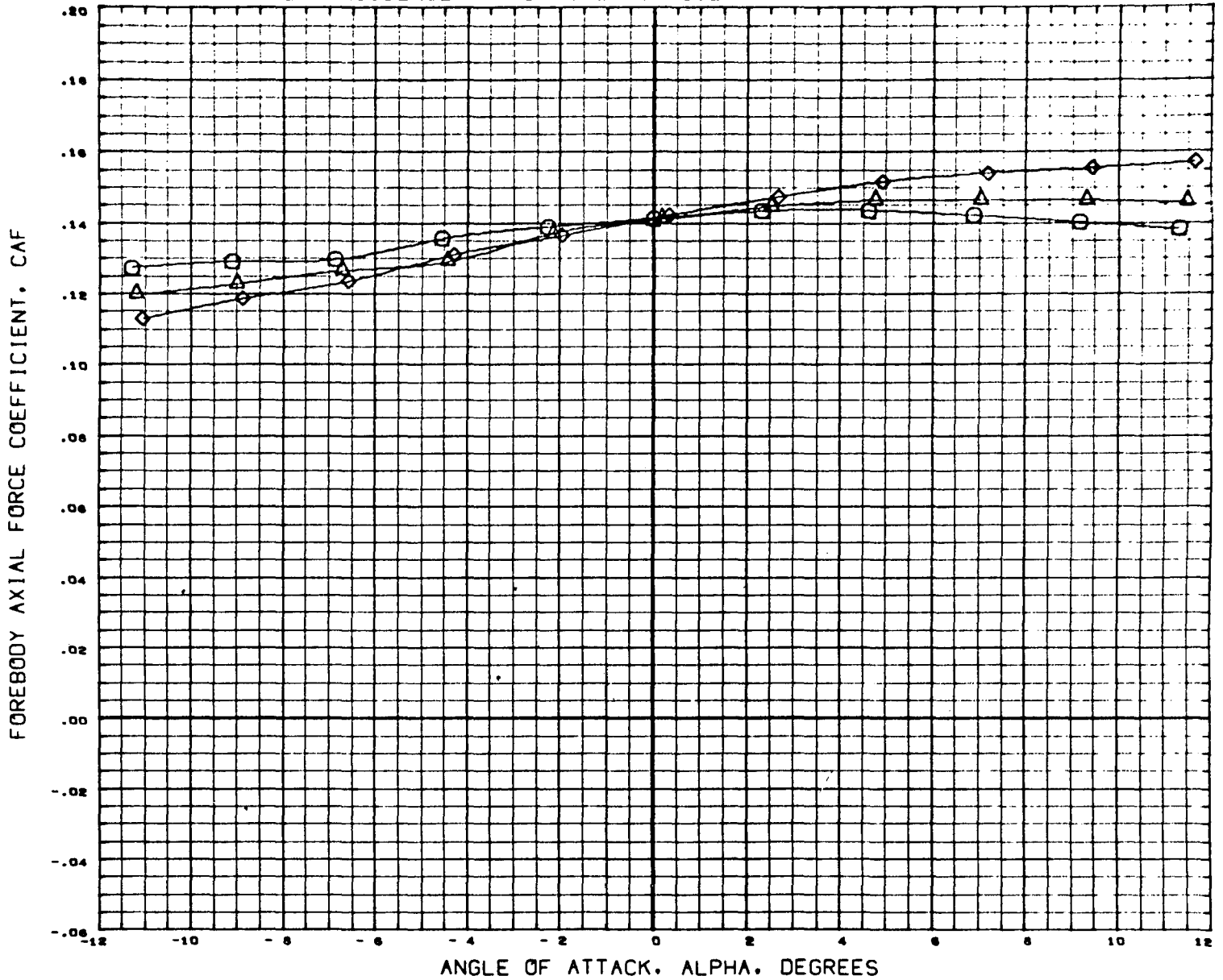
MACH

1.10

PAGE

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

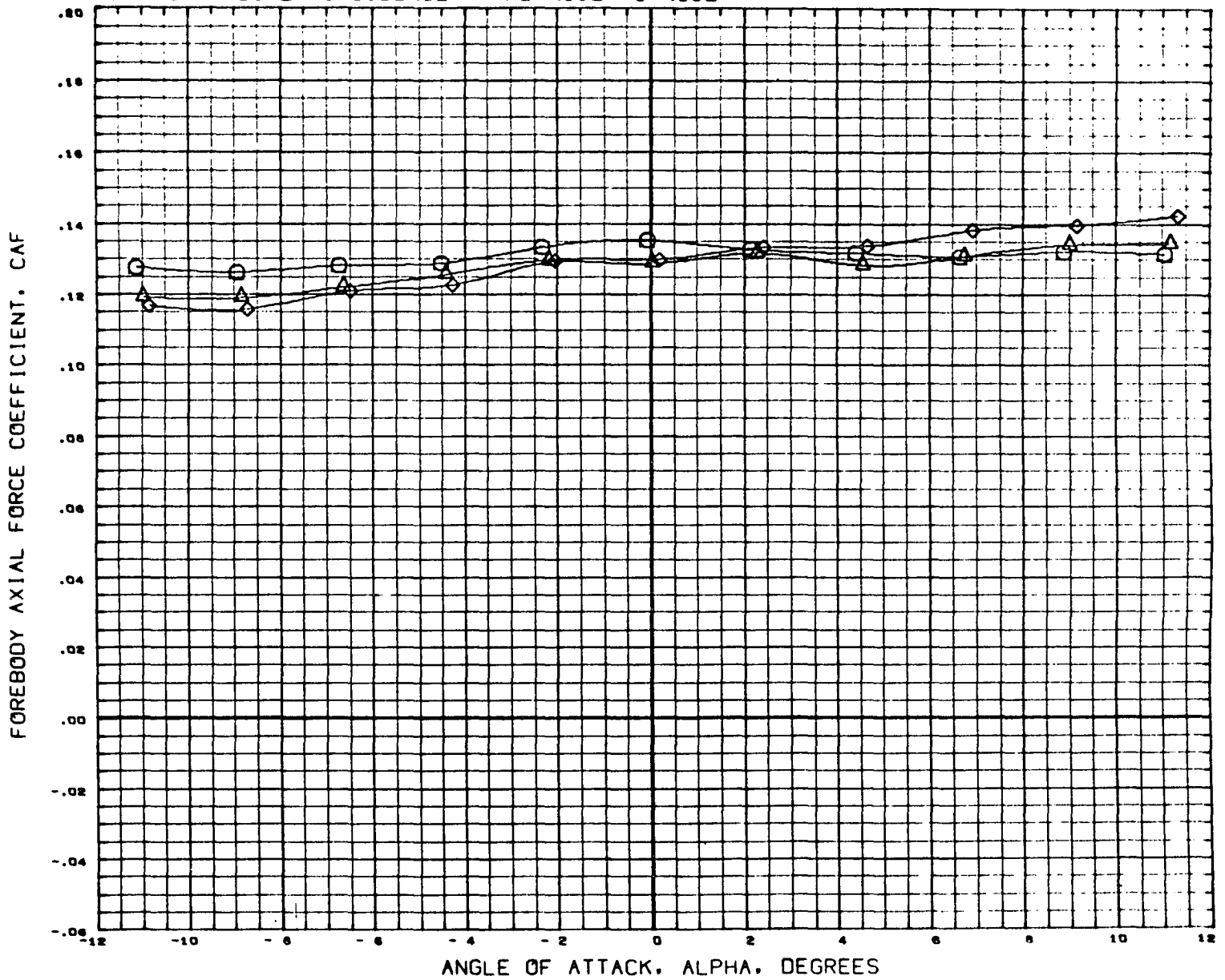


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
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MACH 1.47

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

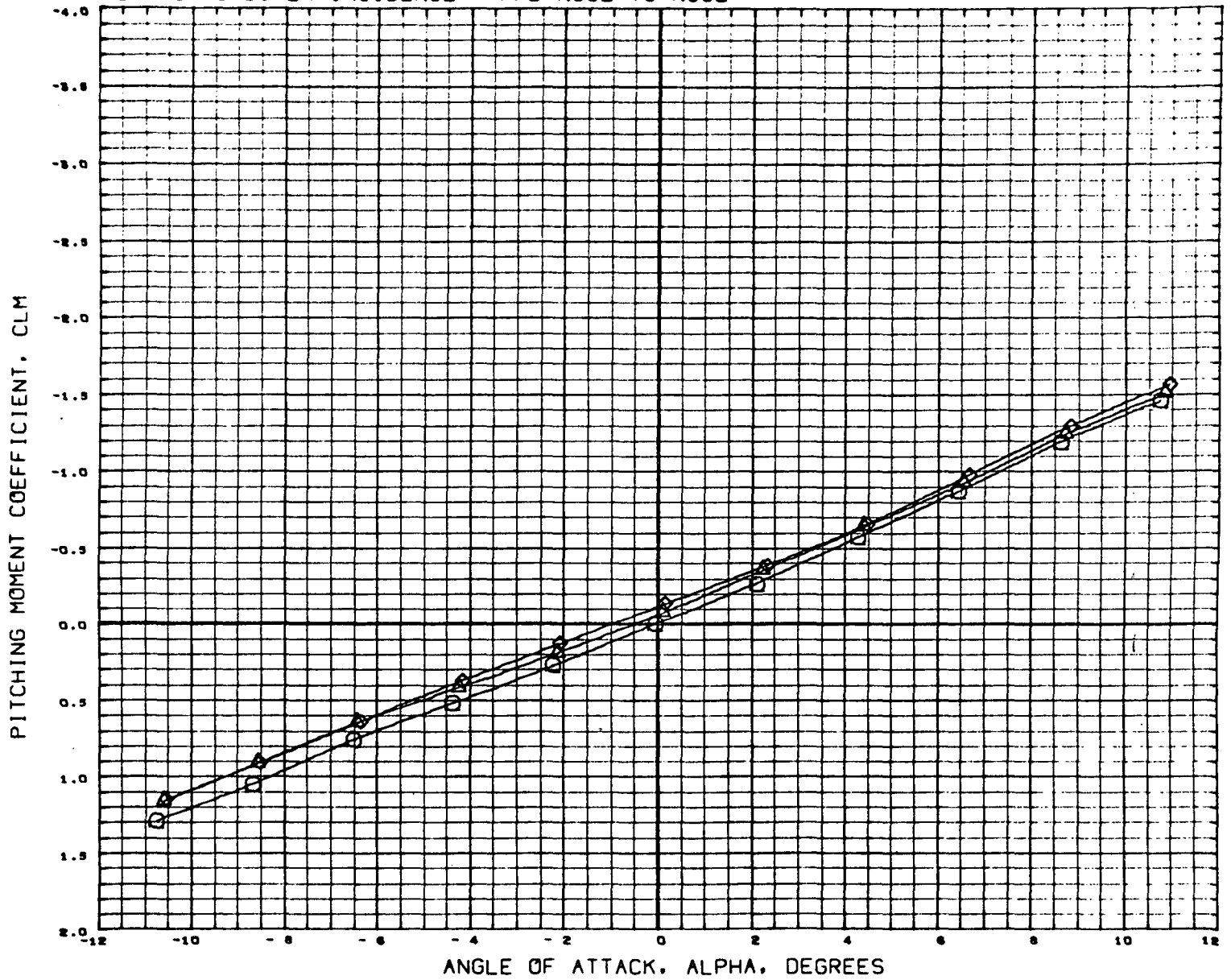


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MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

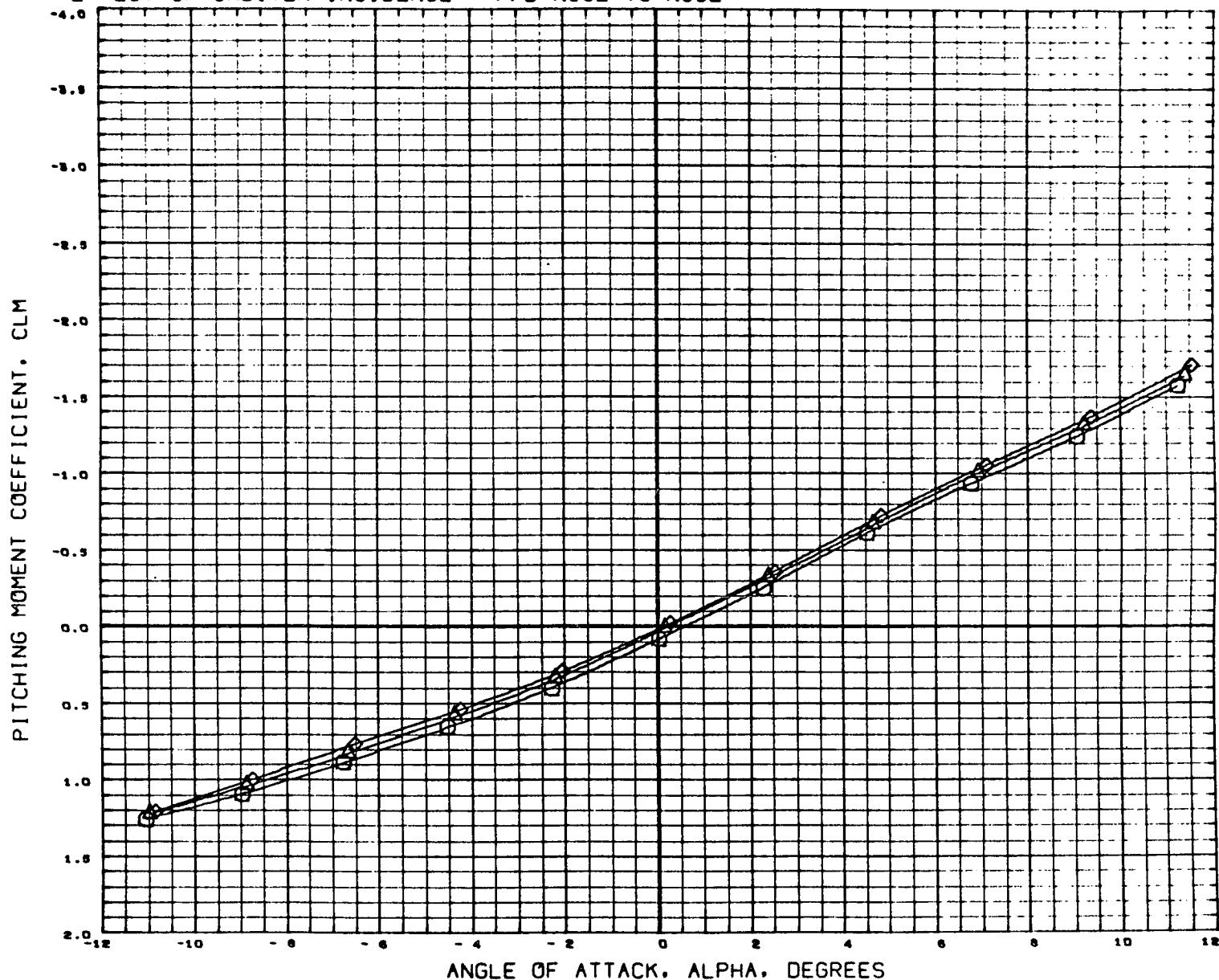


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
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MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

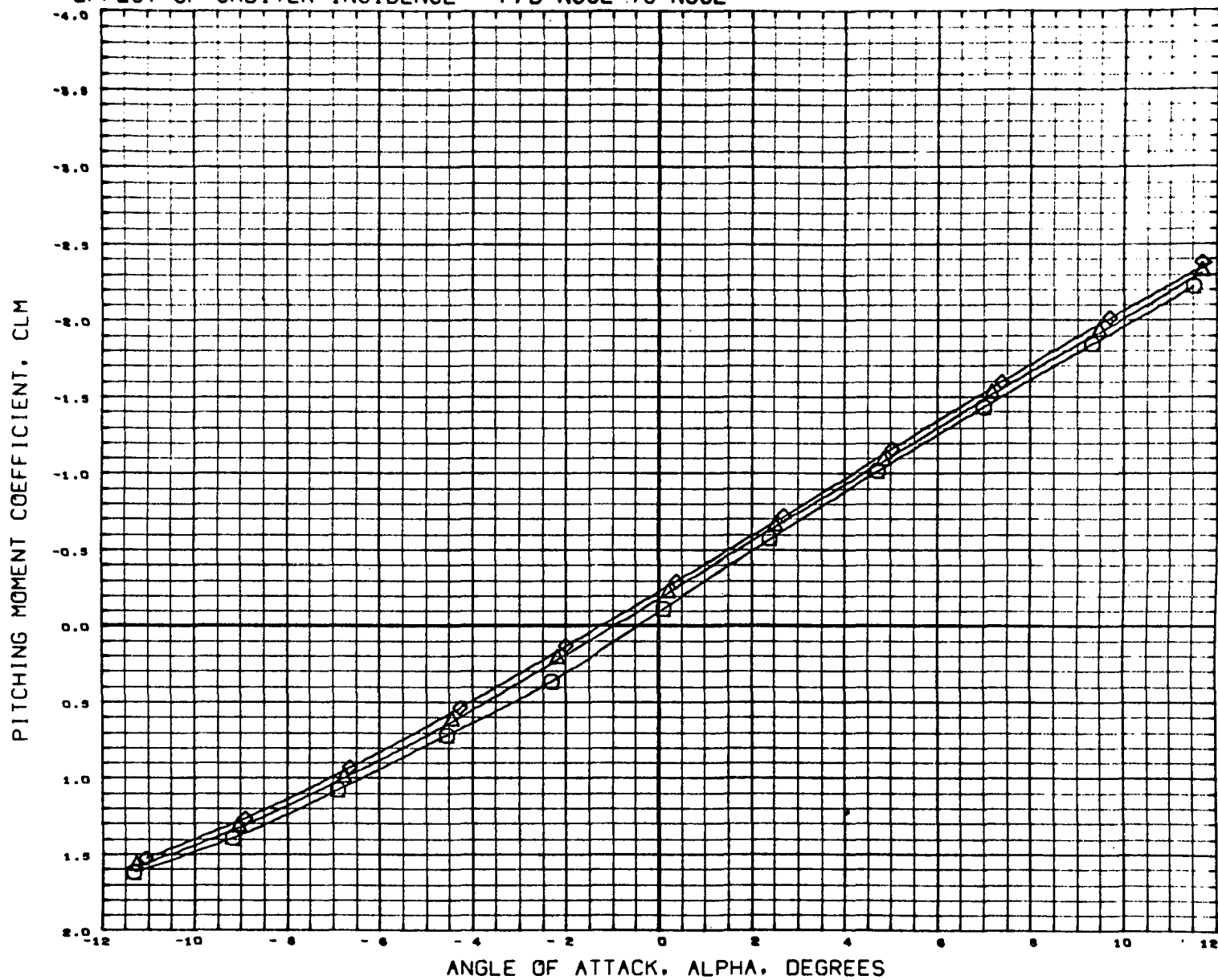


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
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MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

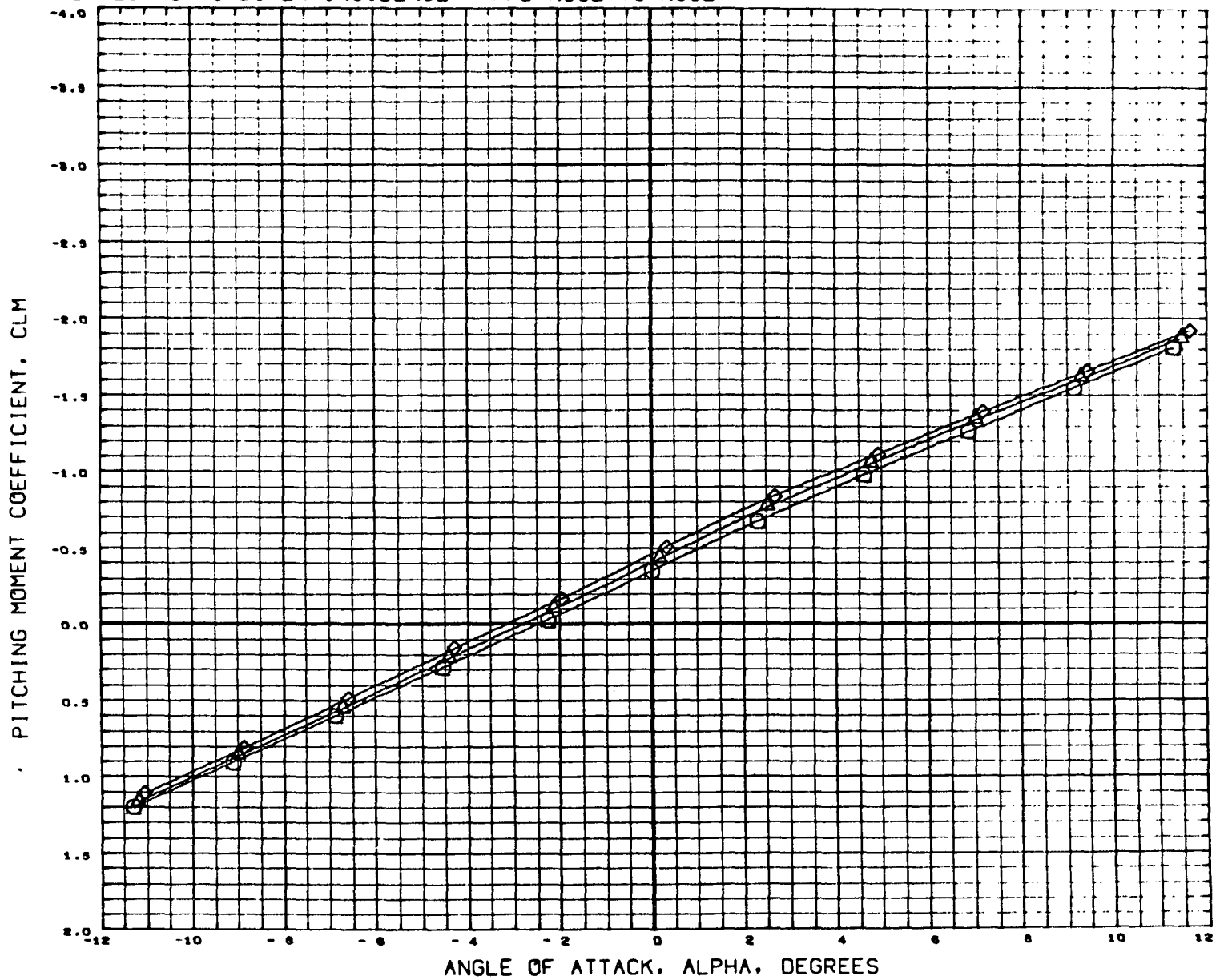


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
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MACH 1.10

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

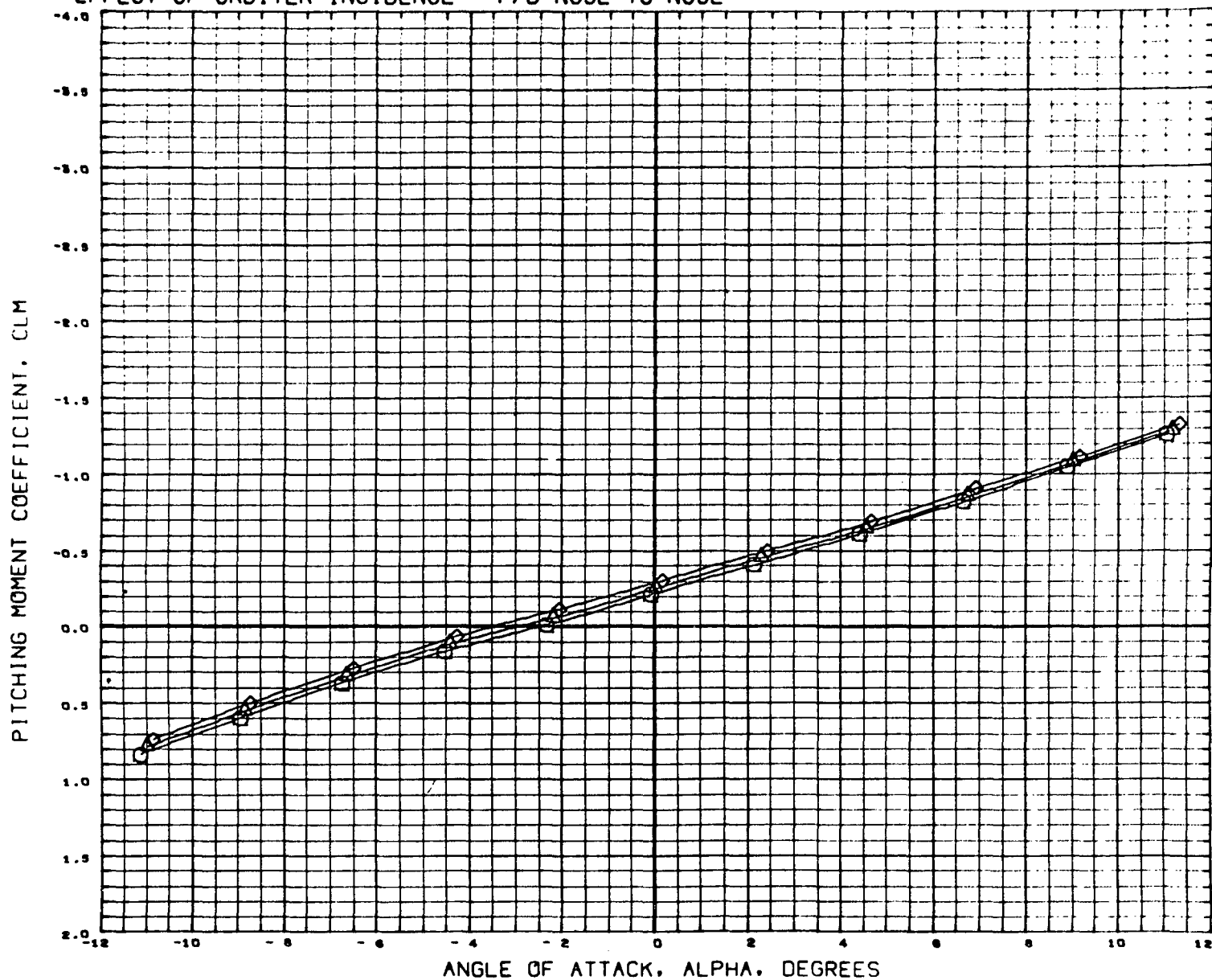


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0990	INCHES
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990	INCHES
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MACH 1.47

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

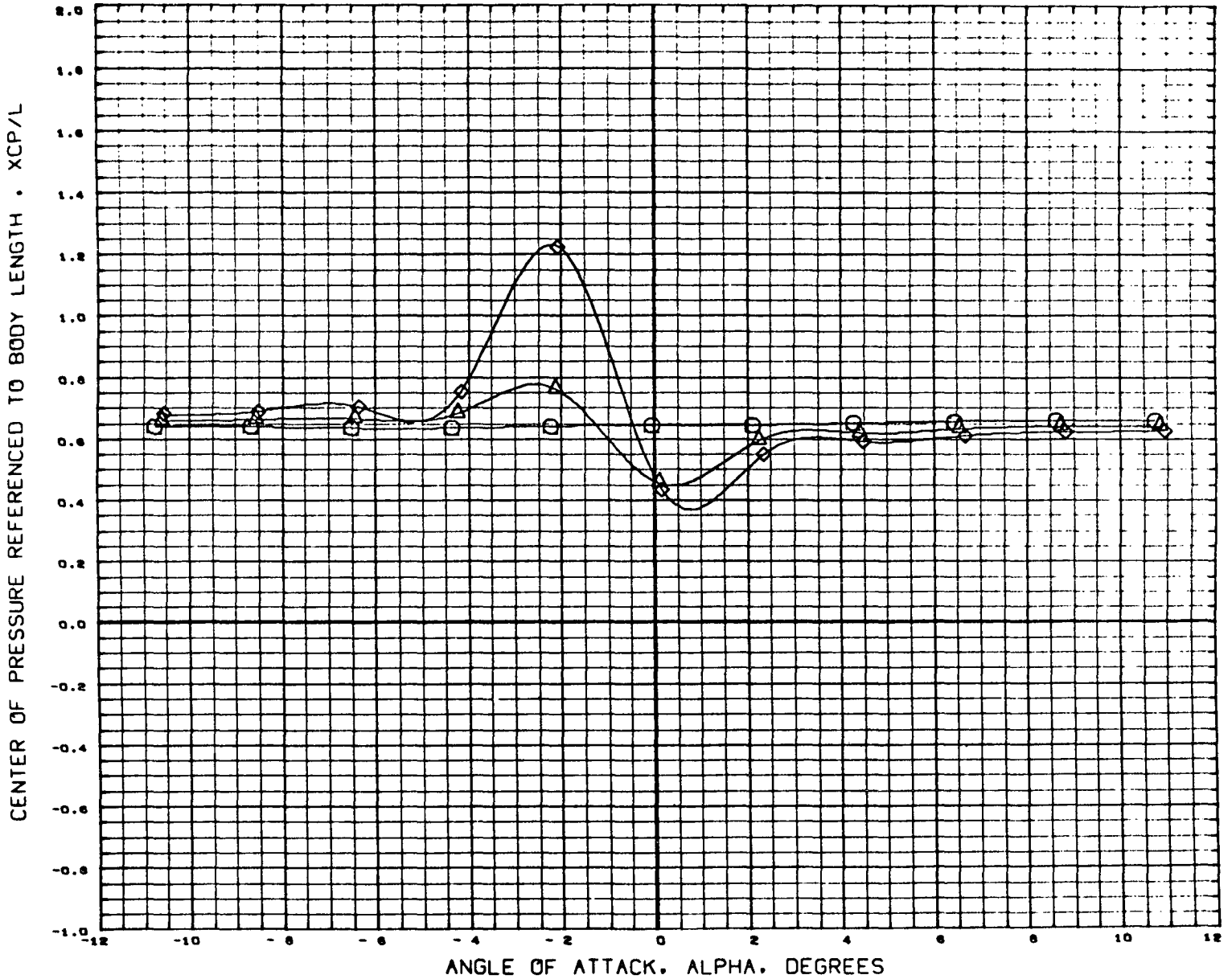


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MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

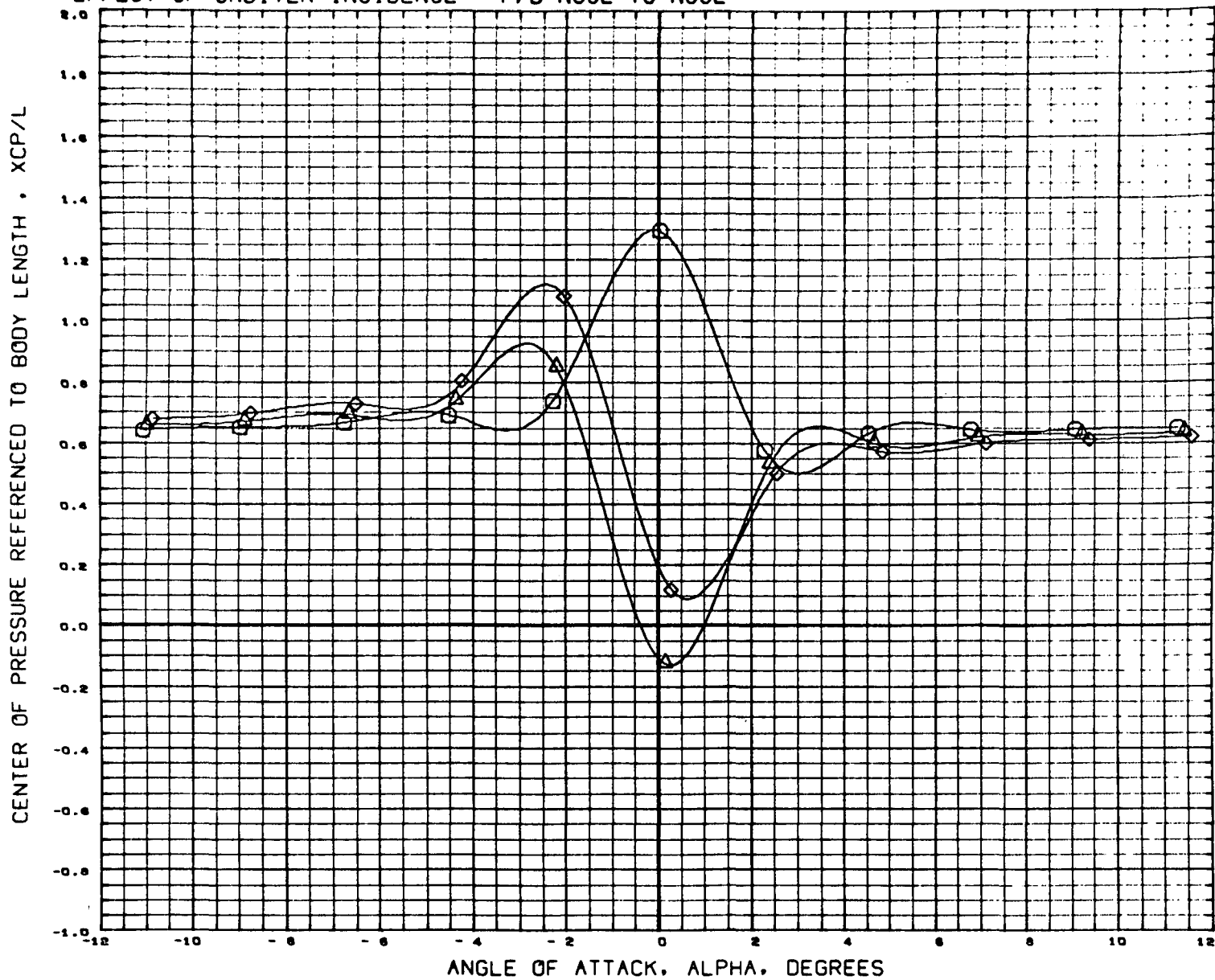


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0990 INCHES
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MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

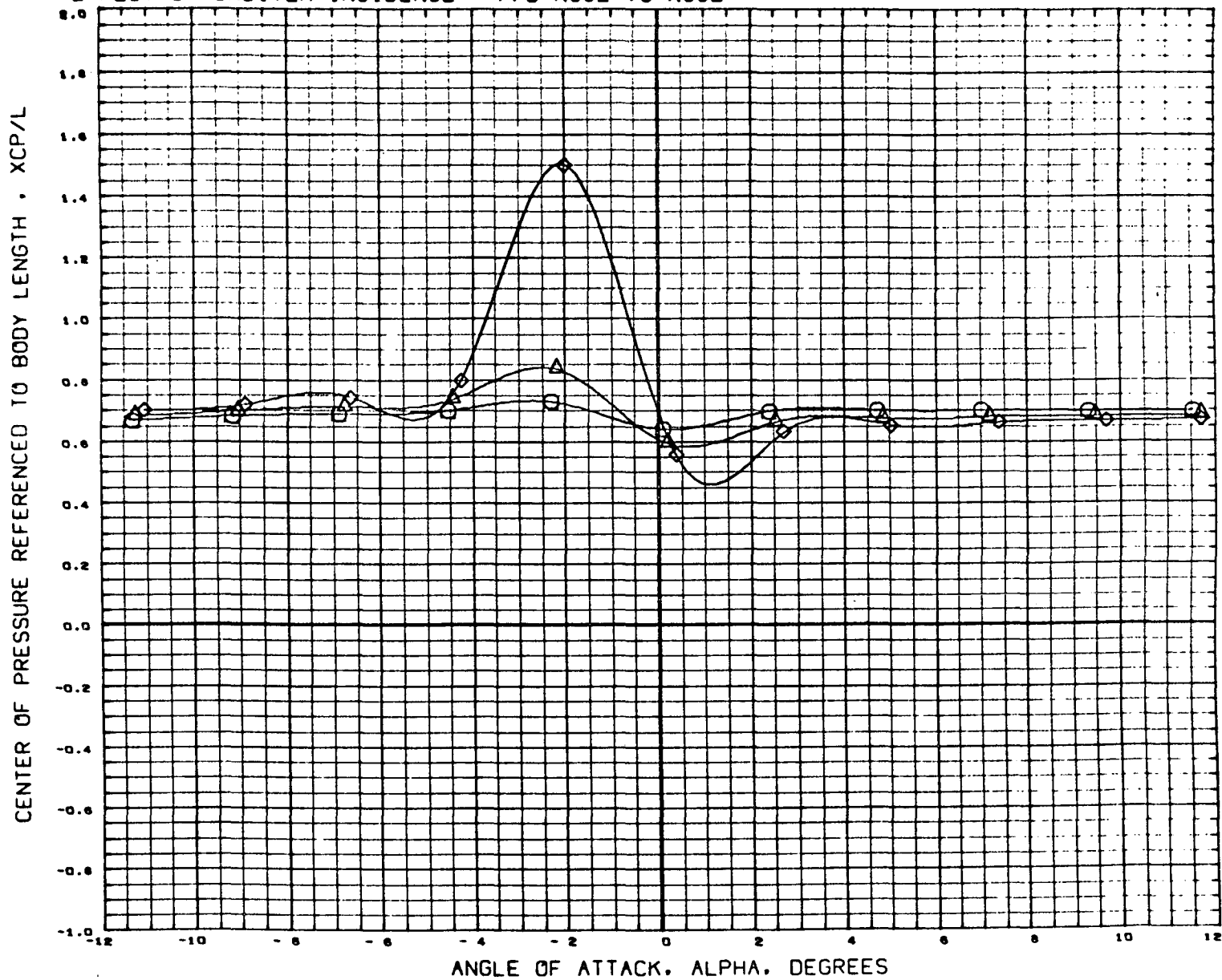


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+BSW17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+BSW17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
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MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

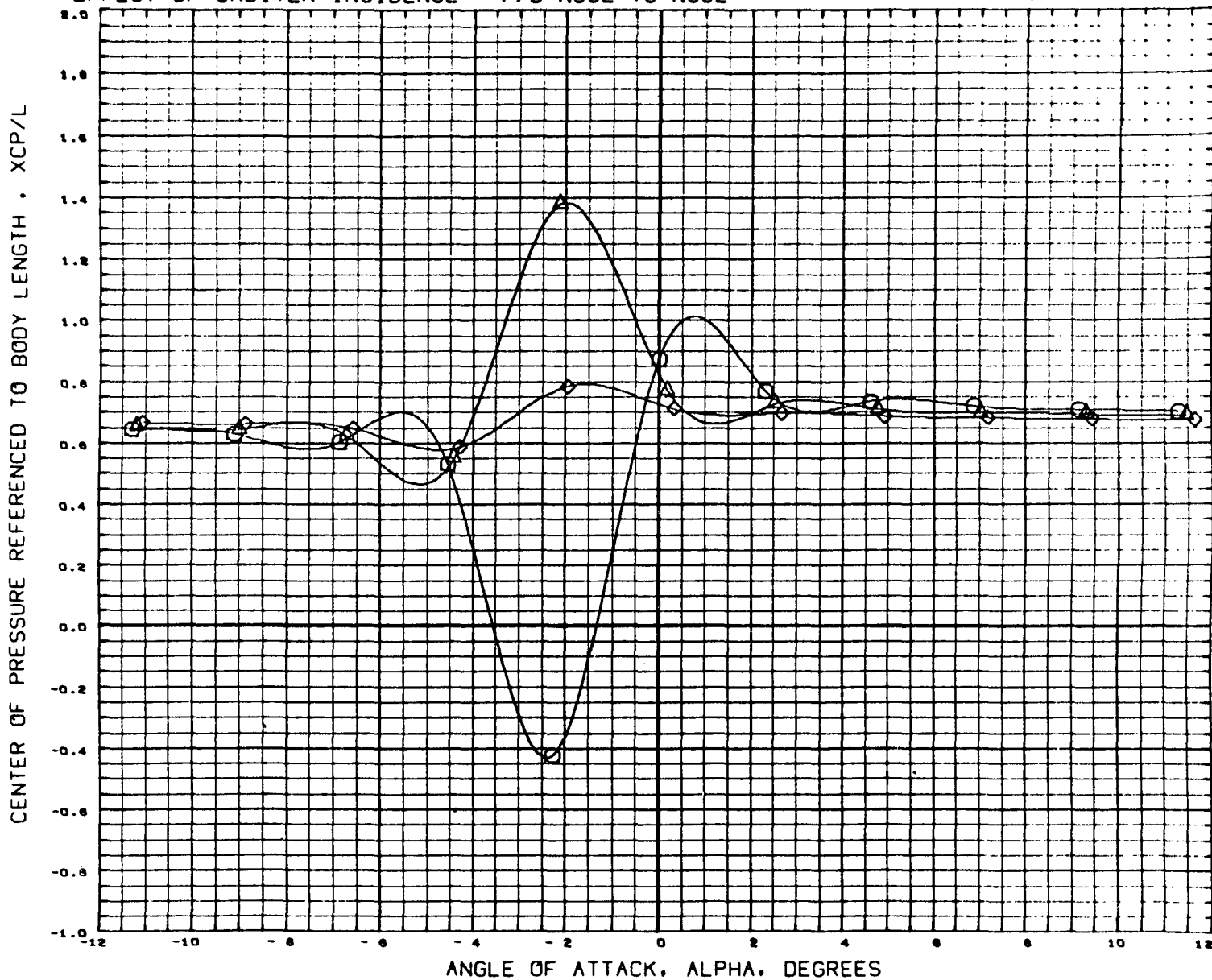


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(H3240A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
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MACH 1.10

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE



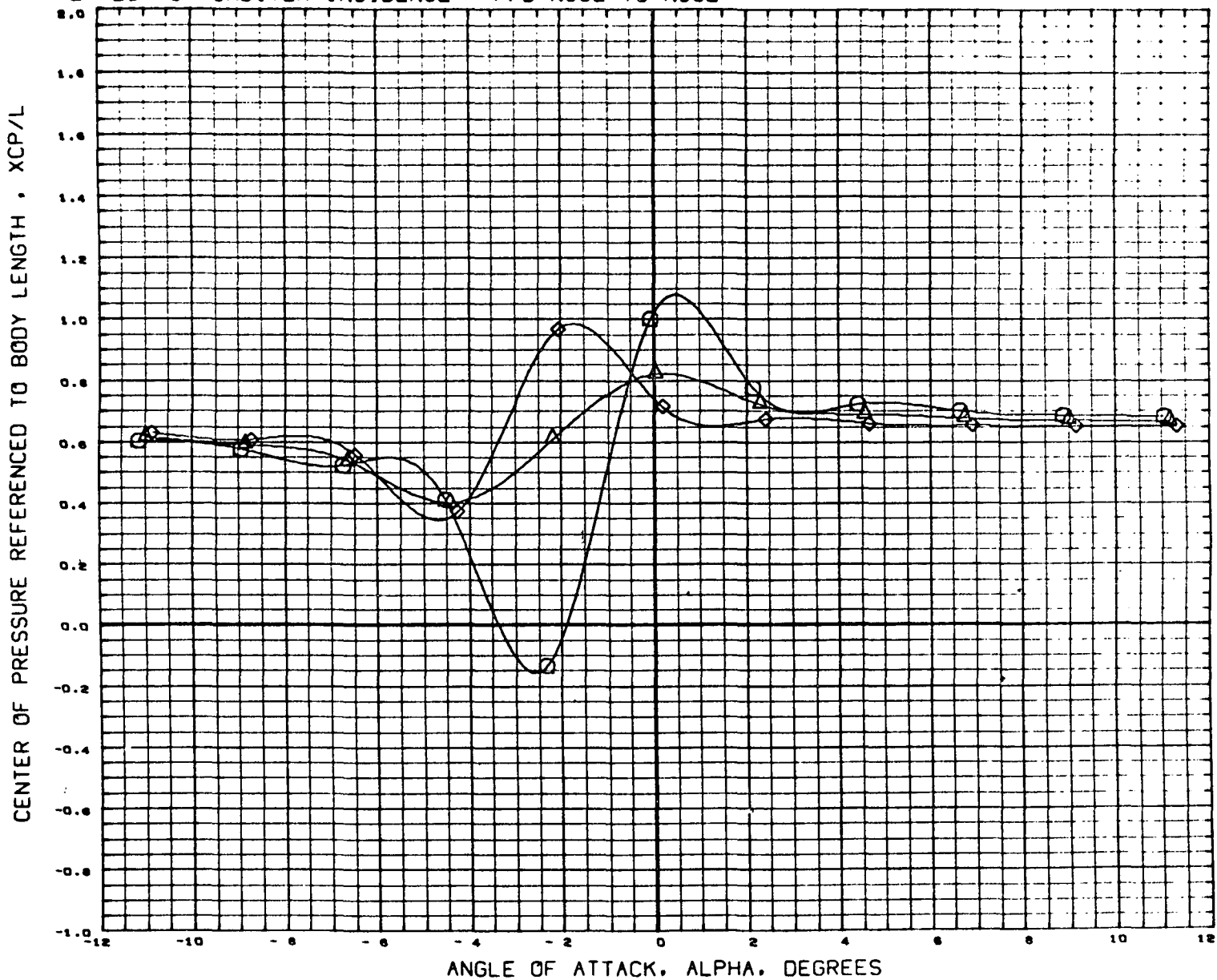
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(H3239A)	M3FC490 NR/GD LAUNCH B2024BW14V8+B35W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
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MACH

1.47

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

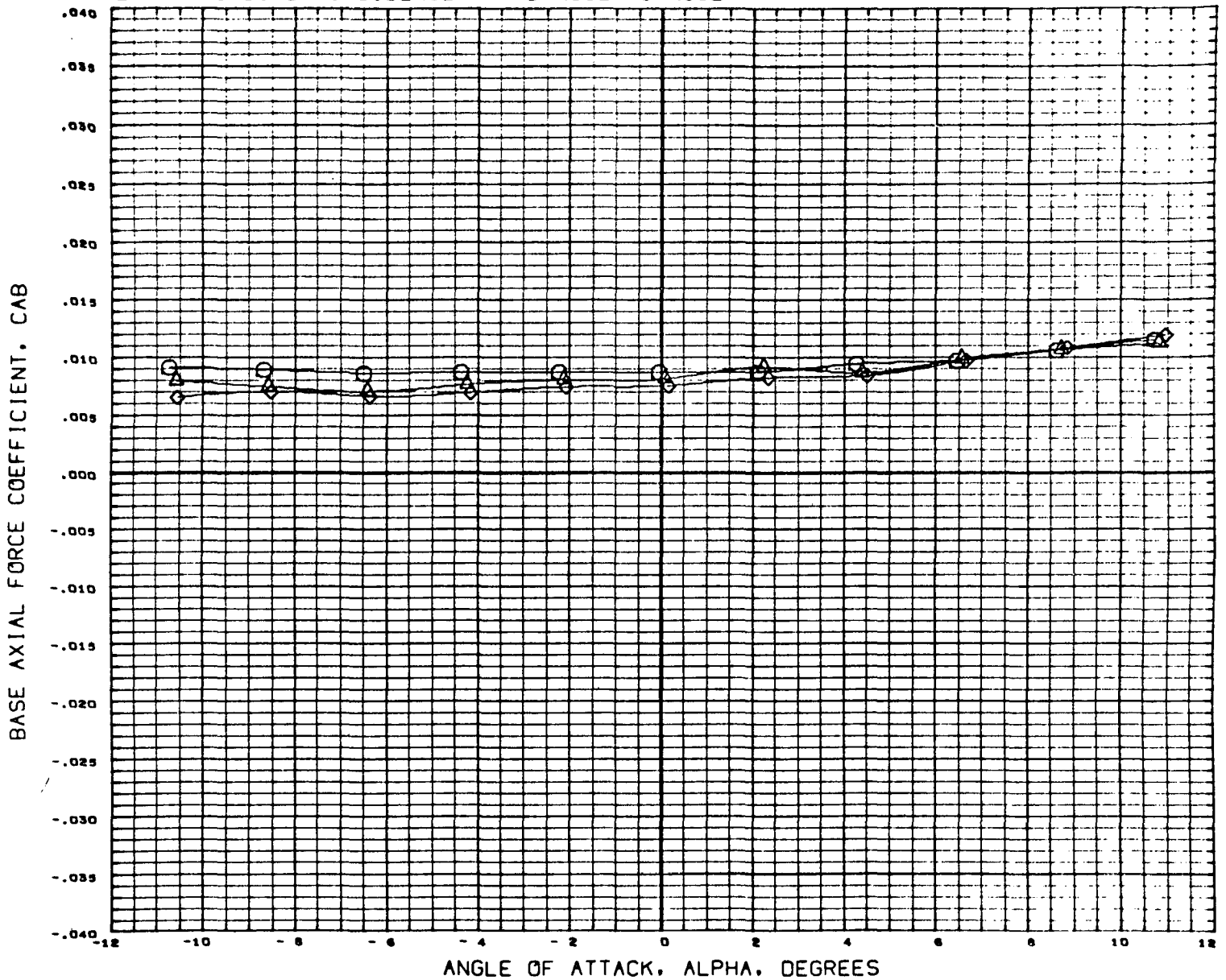


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(H3239A)	M3FC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3240A)	M3FC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
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MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

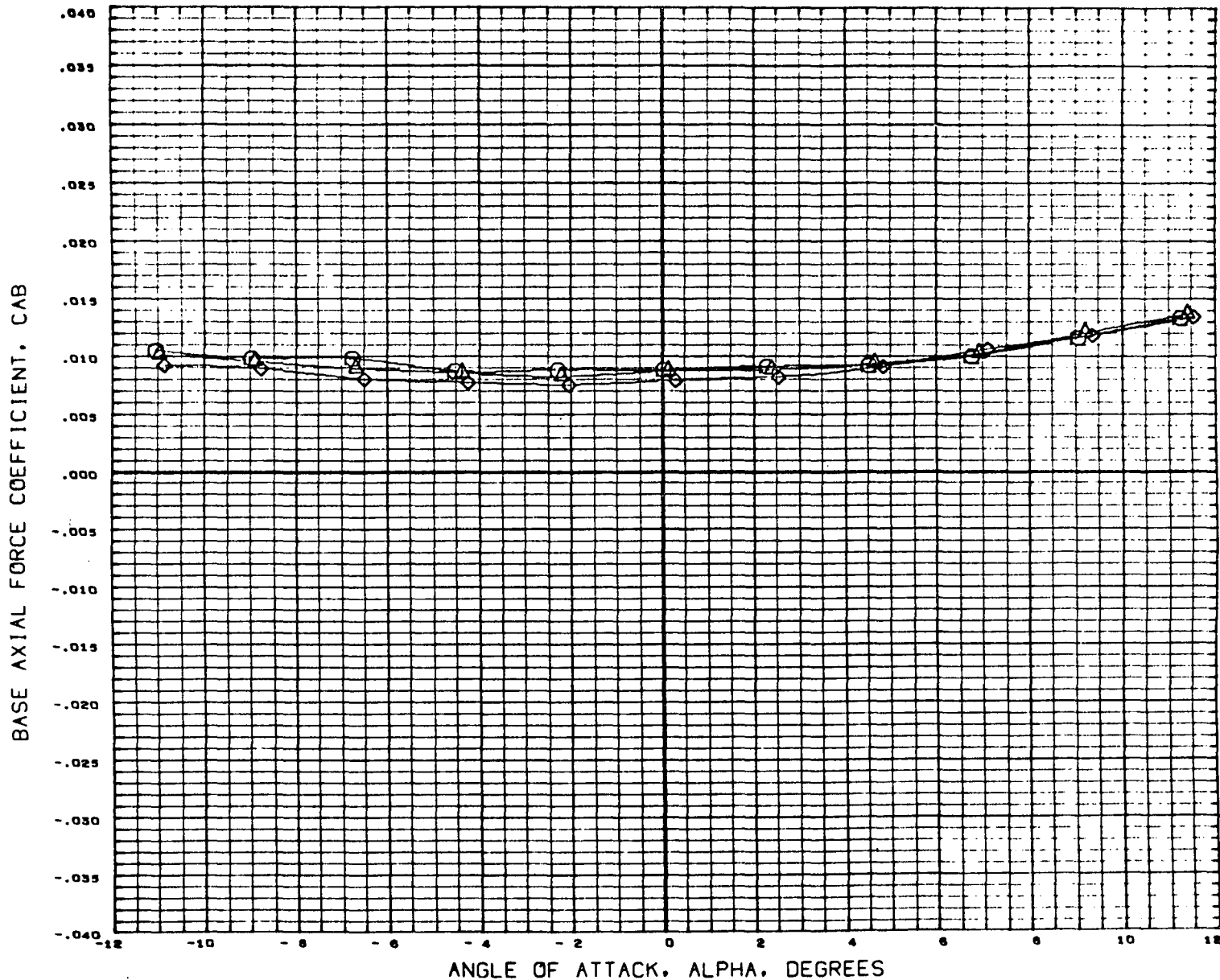


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
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MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

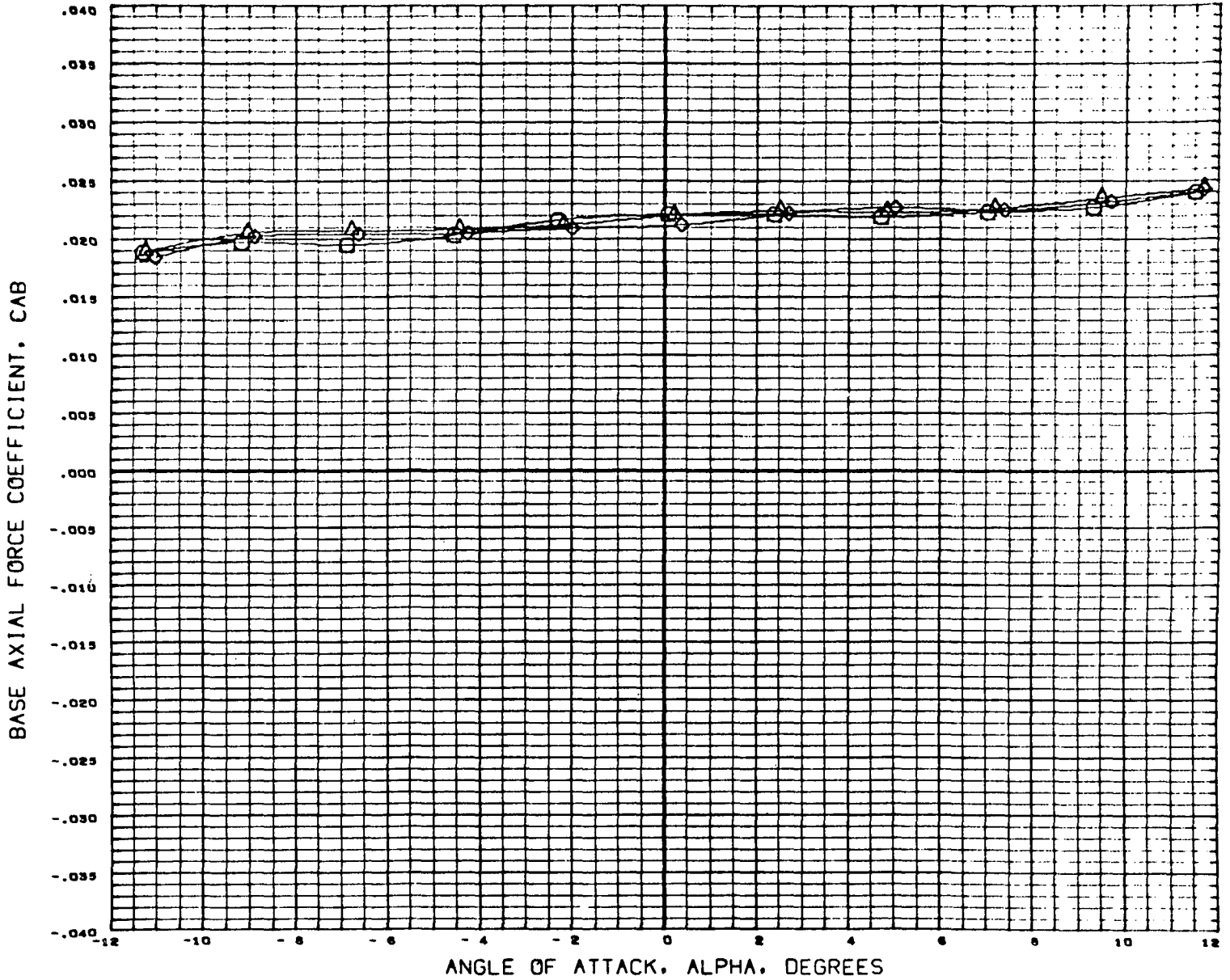


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	4.000	2.000	0.000	0.000	BREF	6.0990	INCHES
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MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

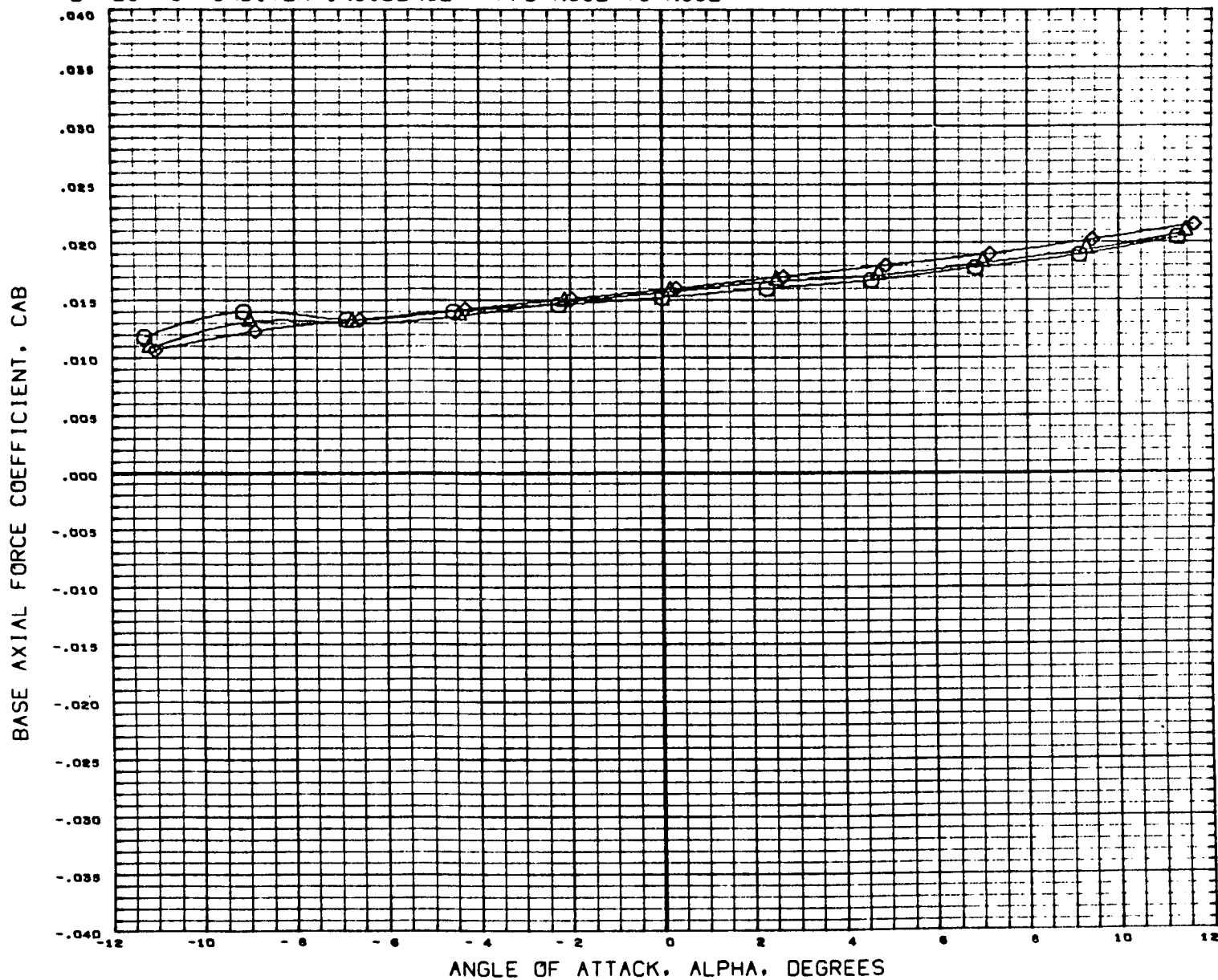


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(H3239A)	MSFC490 NR/GD LAUNCH B20248W14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3240A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

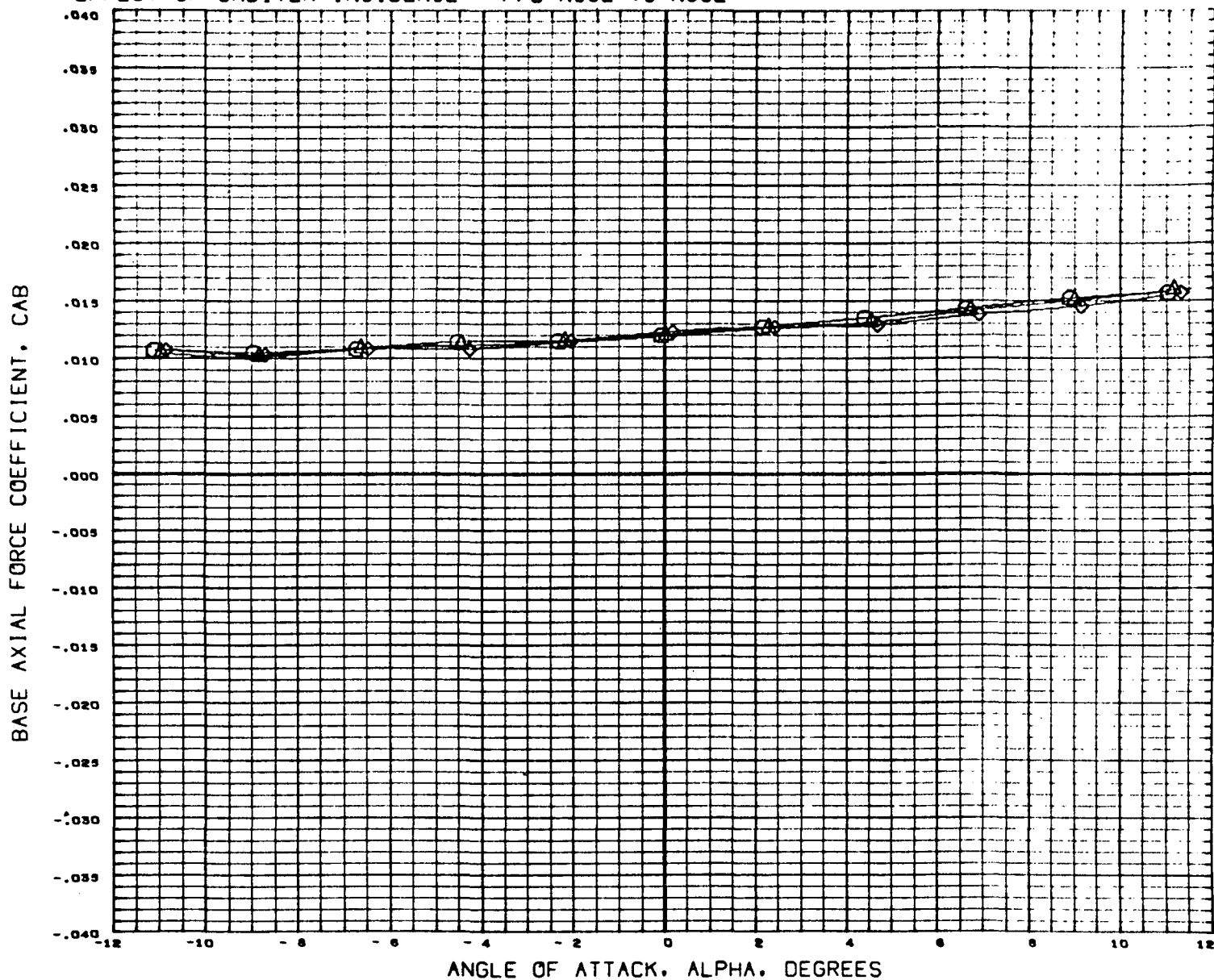


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(H3239A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	SREF	15.6560	SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.47

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

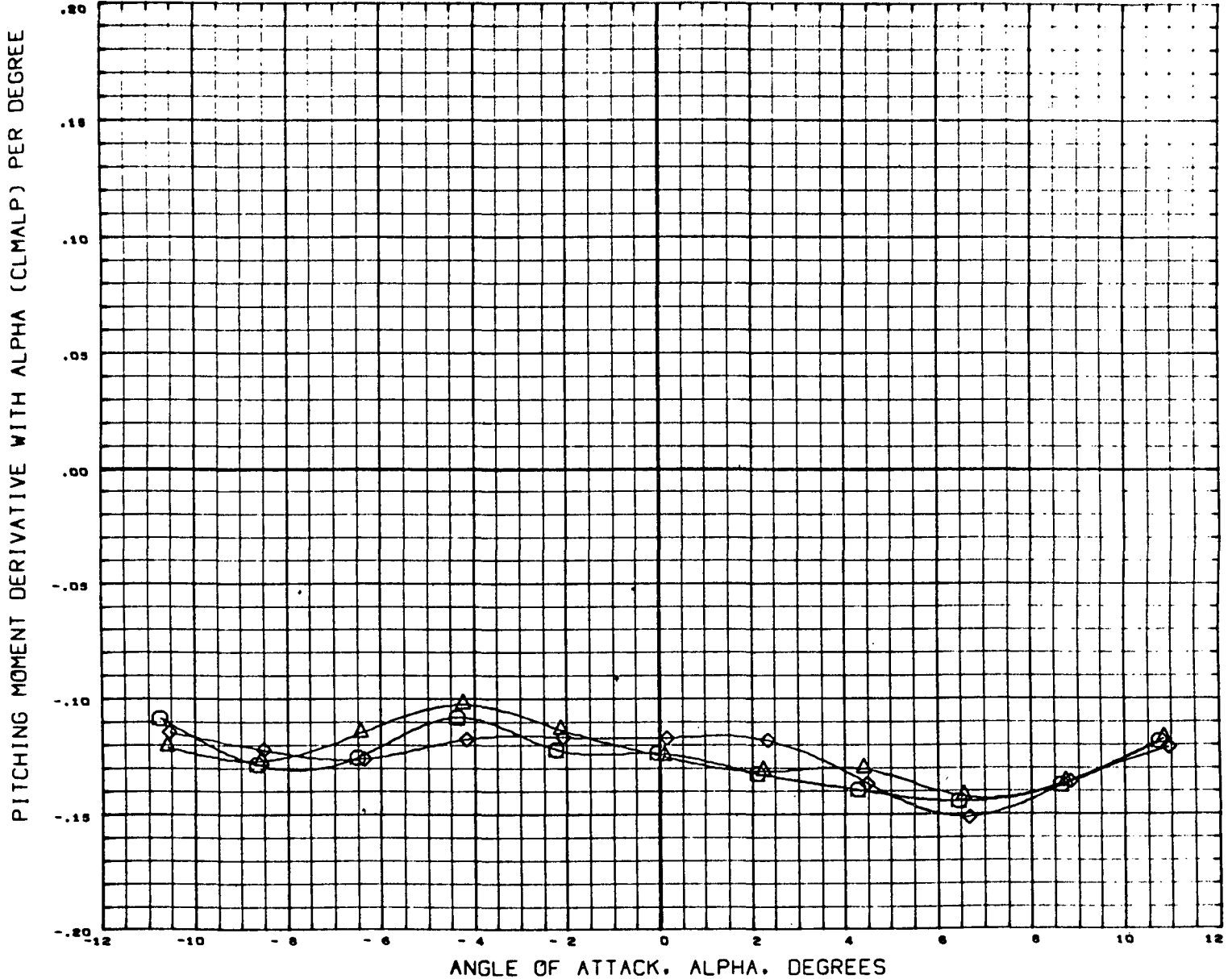


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3239A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 3Q IN
(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE



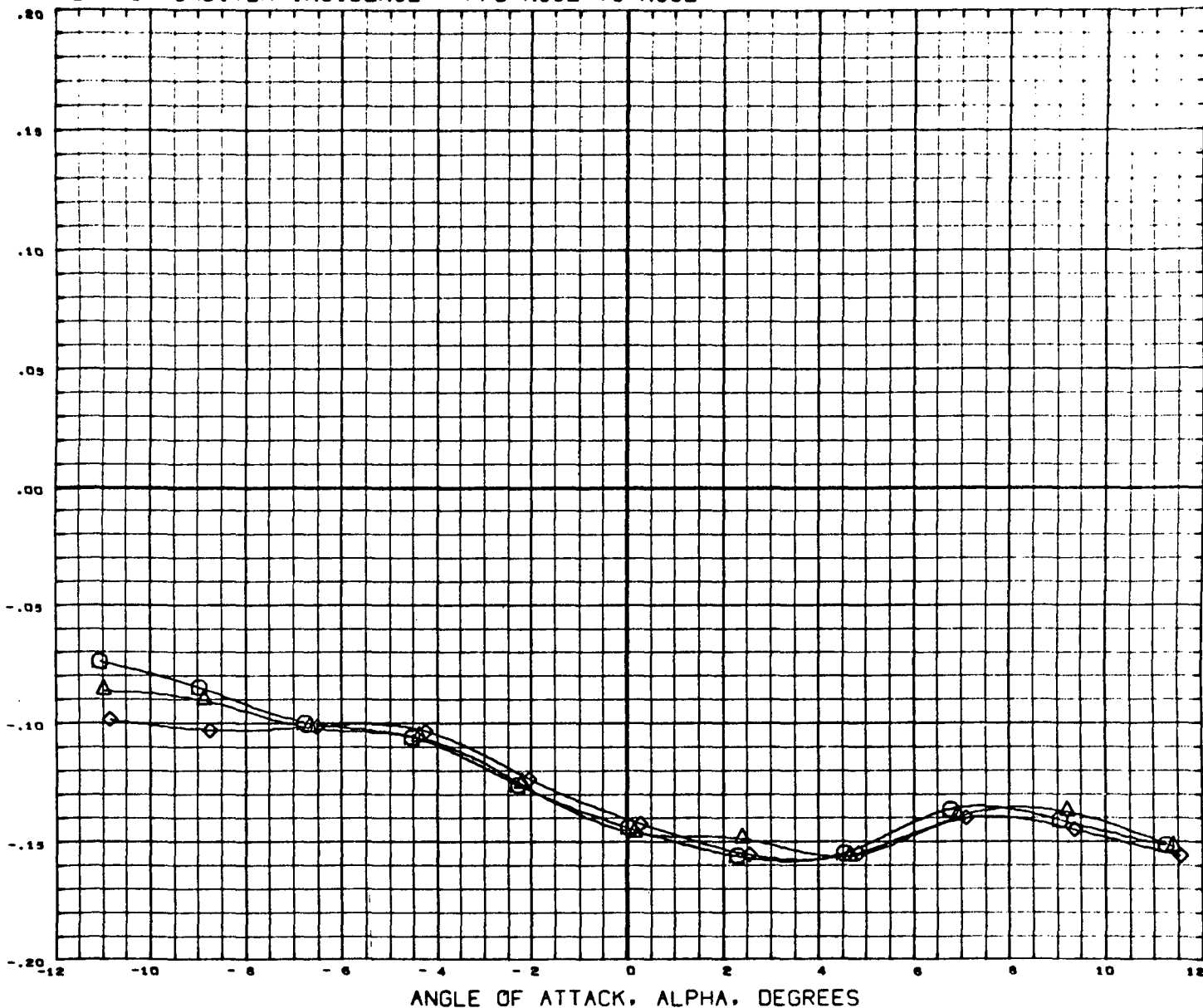
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13239A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	SREF	15.6160	50 IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(13240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



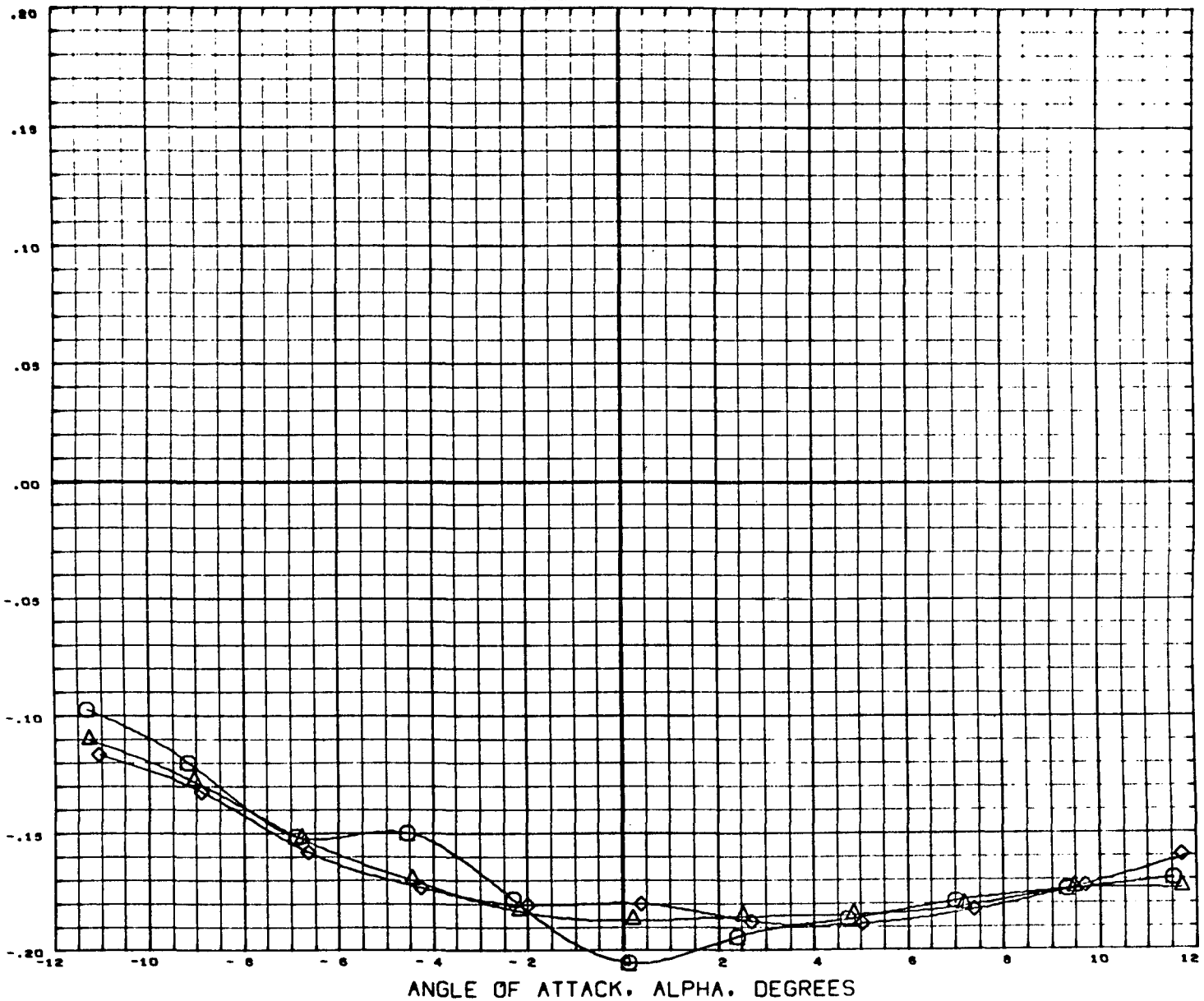
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	SREF	15.6560	SQ IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(13240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



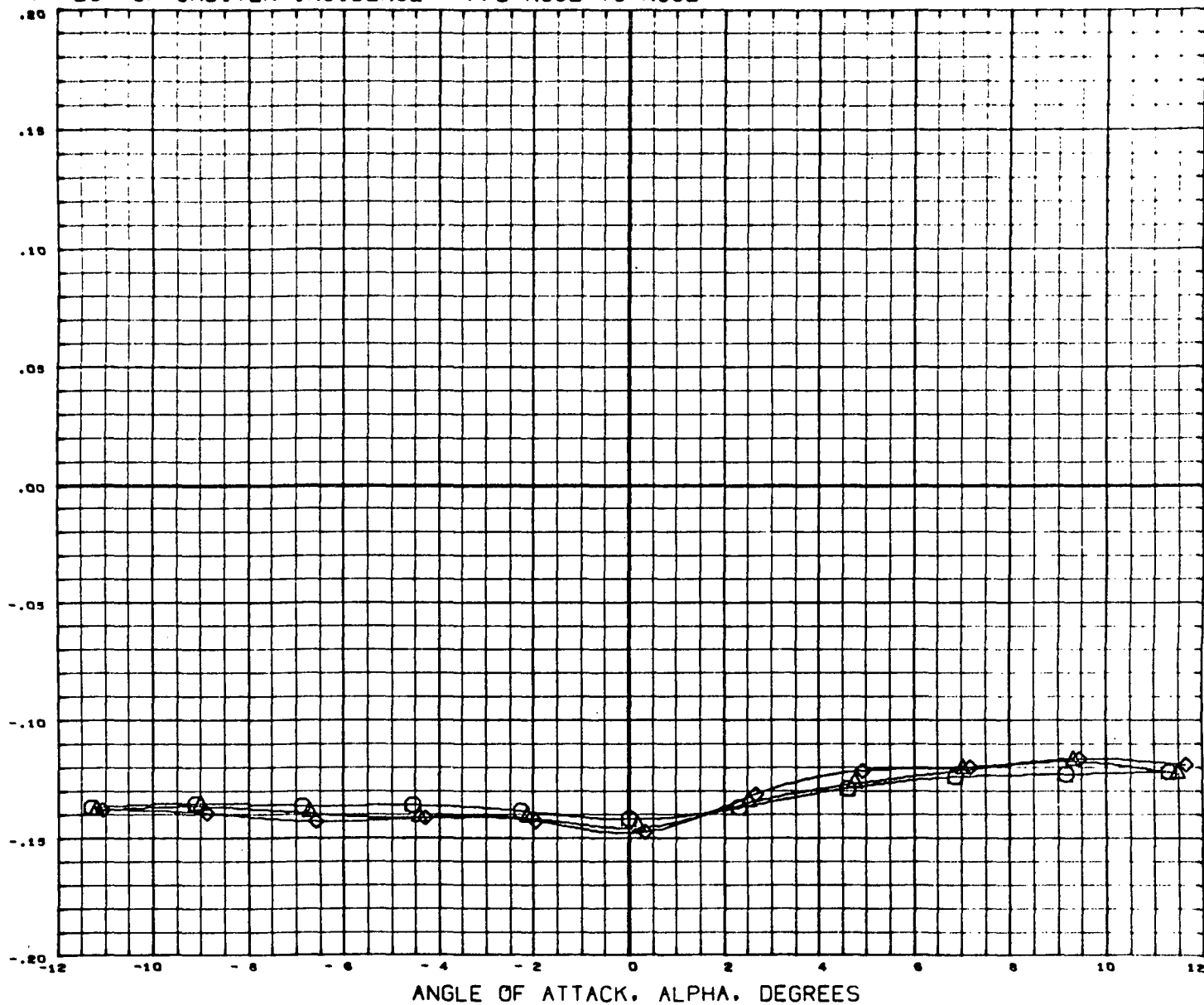
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	2.000	0.000	0.000	SREF	15.6560	50 IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(13240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	4.000	2.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.10

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE

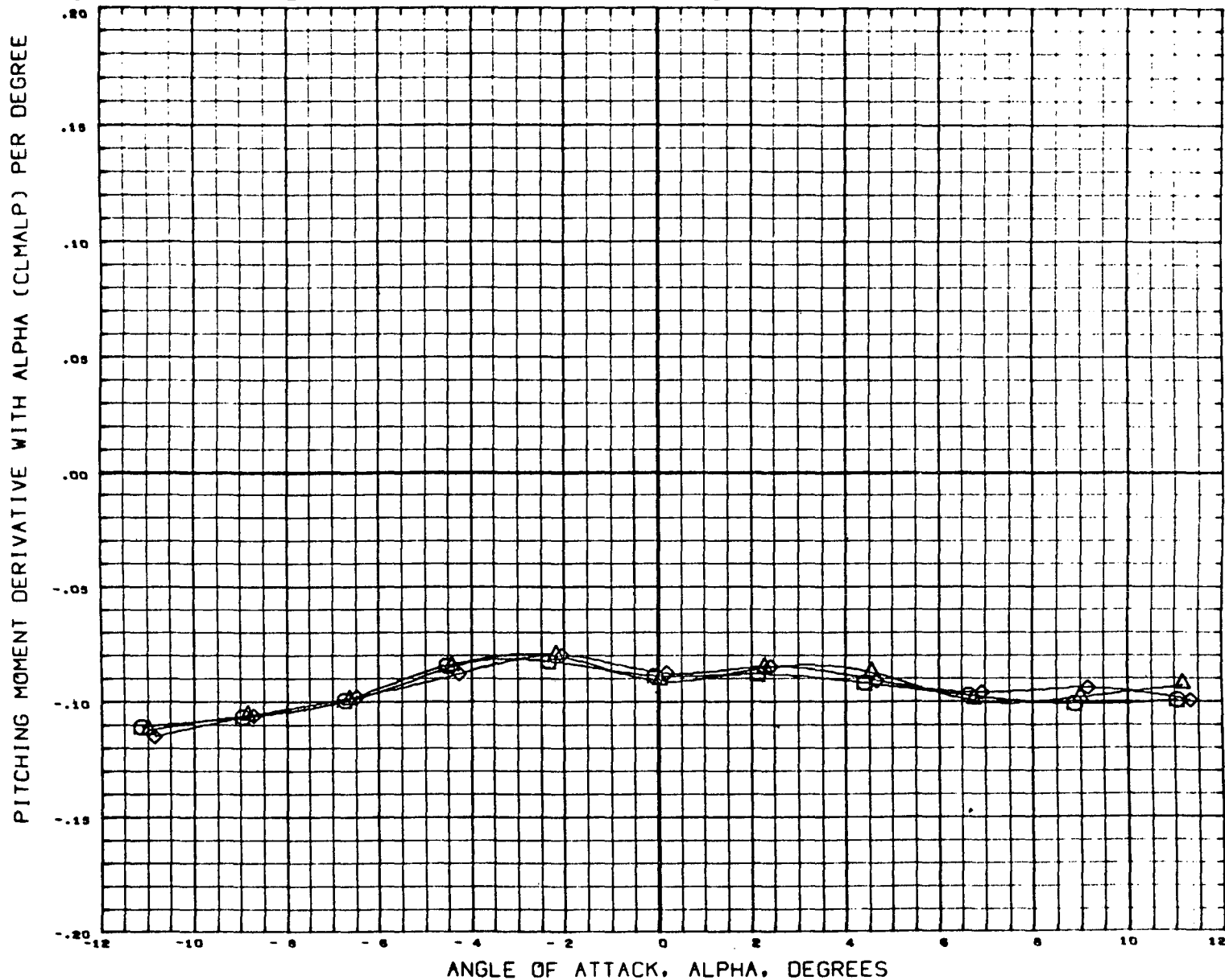


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13238A)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 30 IN
(13239A)	MSFC490 NR/GD LAUNCH 820248W14V8+85W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13240A)	MSFC490 NR/GD LAUNCH 820148W14V8+85W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.47

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

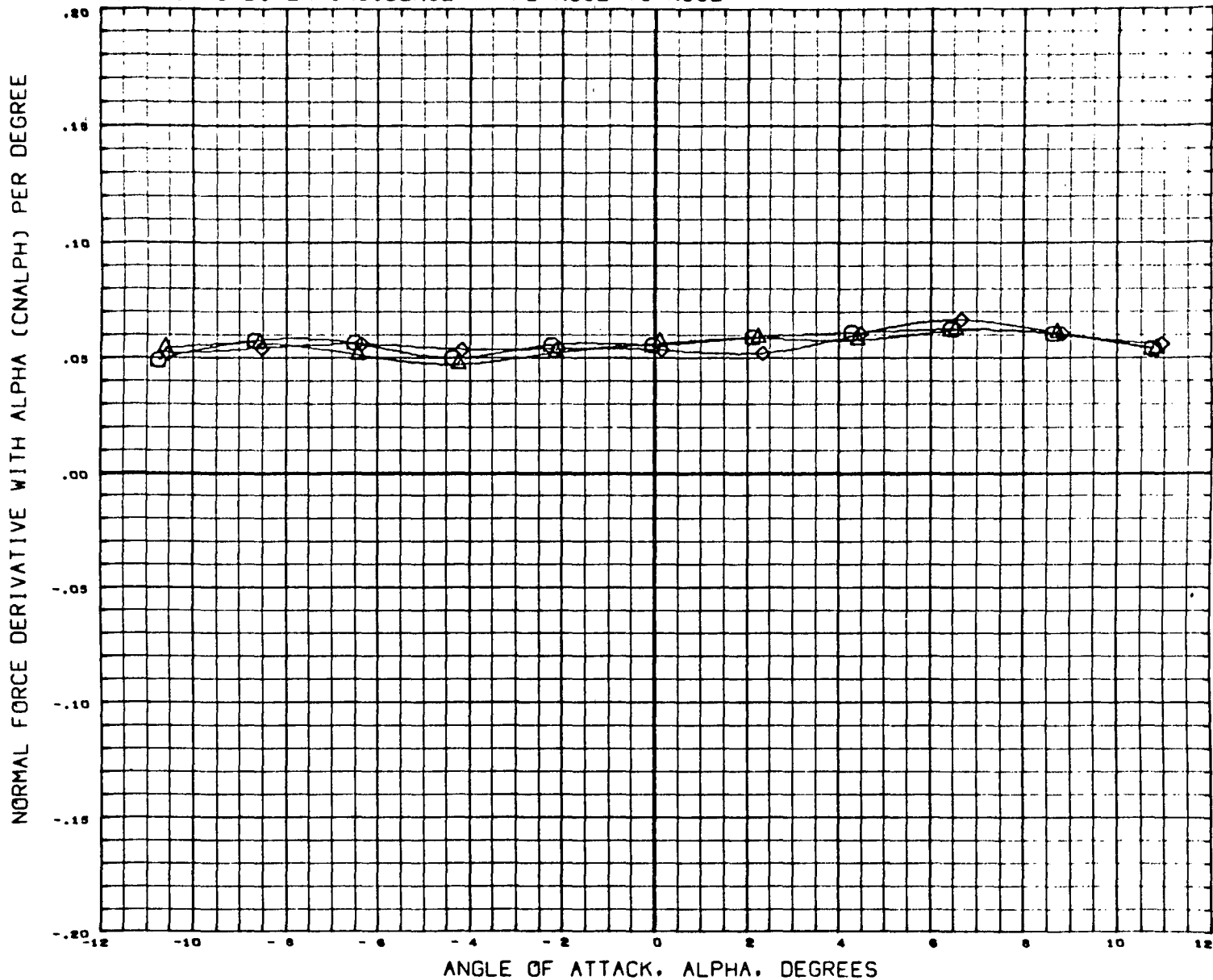


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(I3239A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	2.000	0.000	0.000	SREF	15.6960	50 IN
(I3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(I3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	4.000	2.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

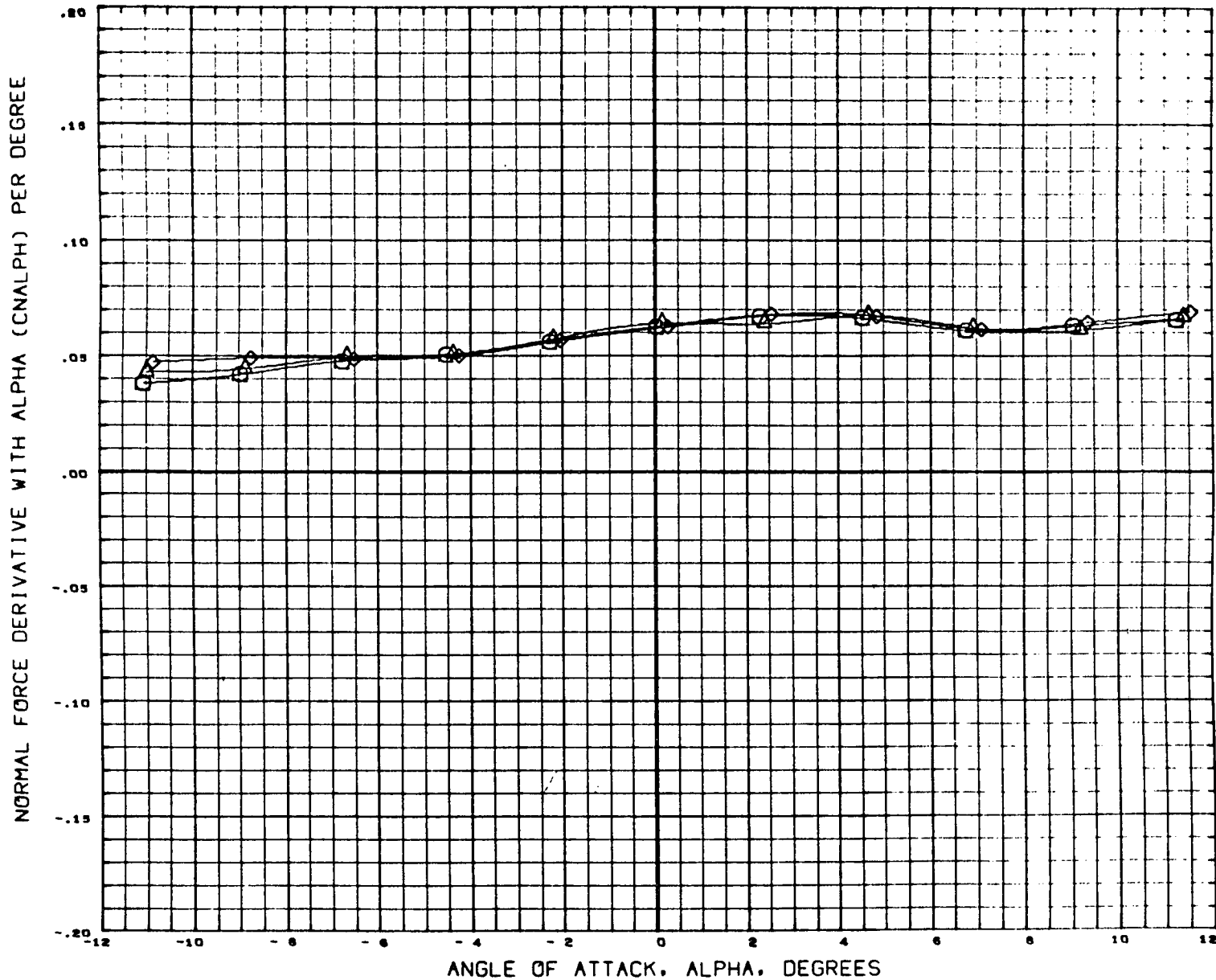


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(1323AA)	MSPC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSPC490 NR/GD LAUNCH B2024BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13240A)	MSPC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE



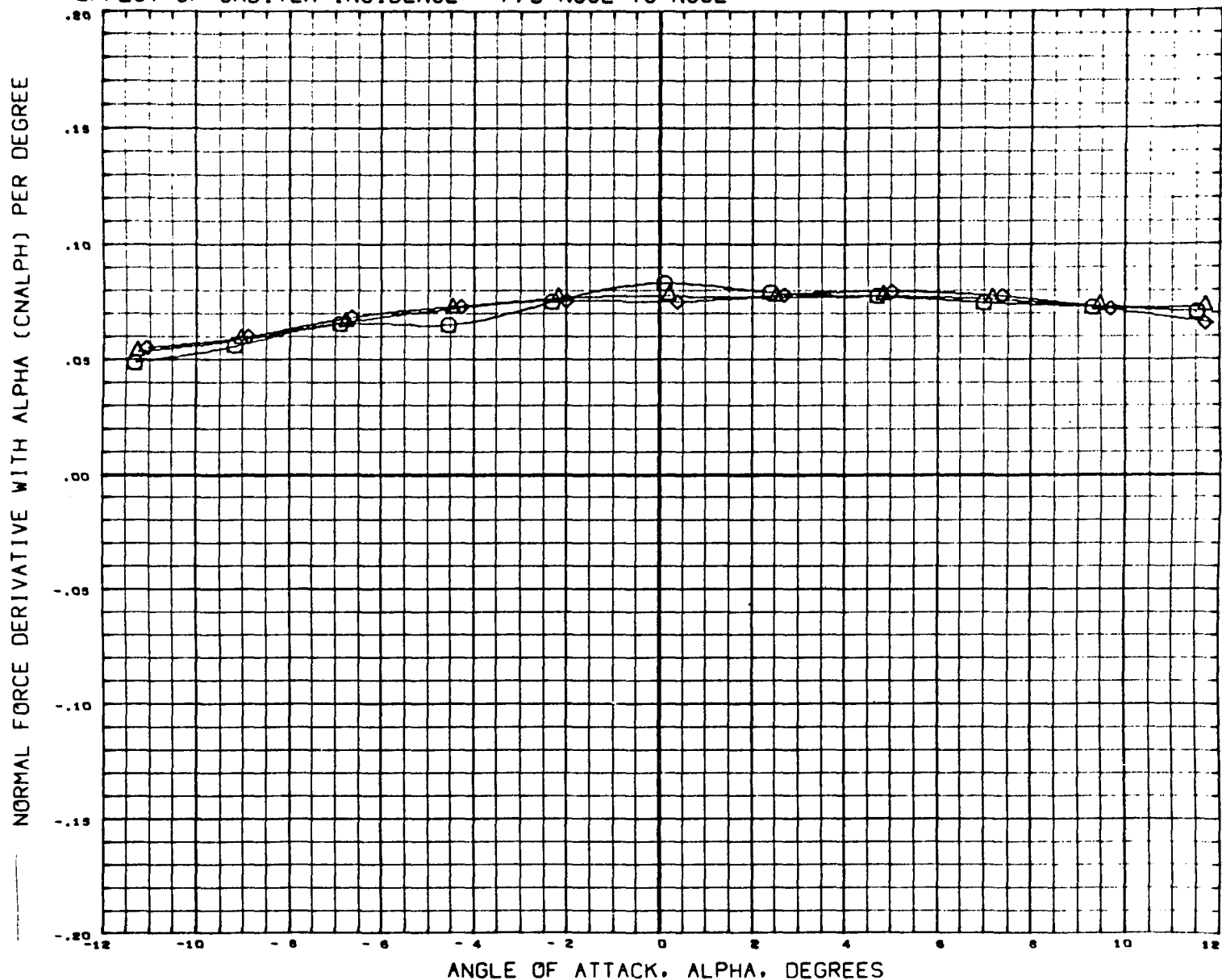
ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13239A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

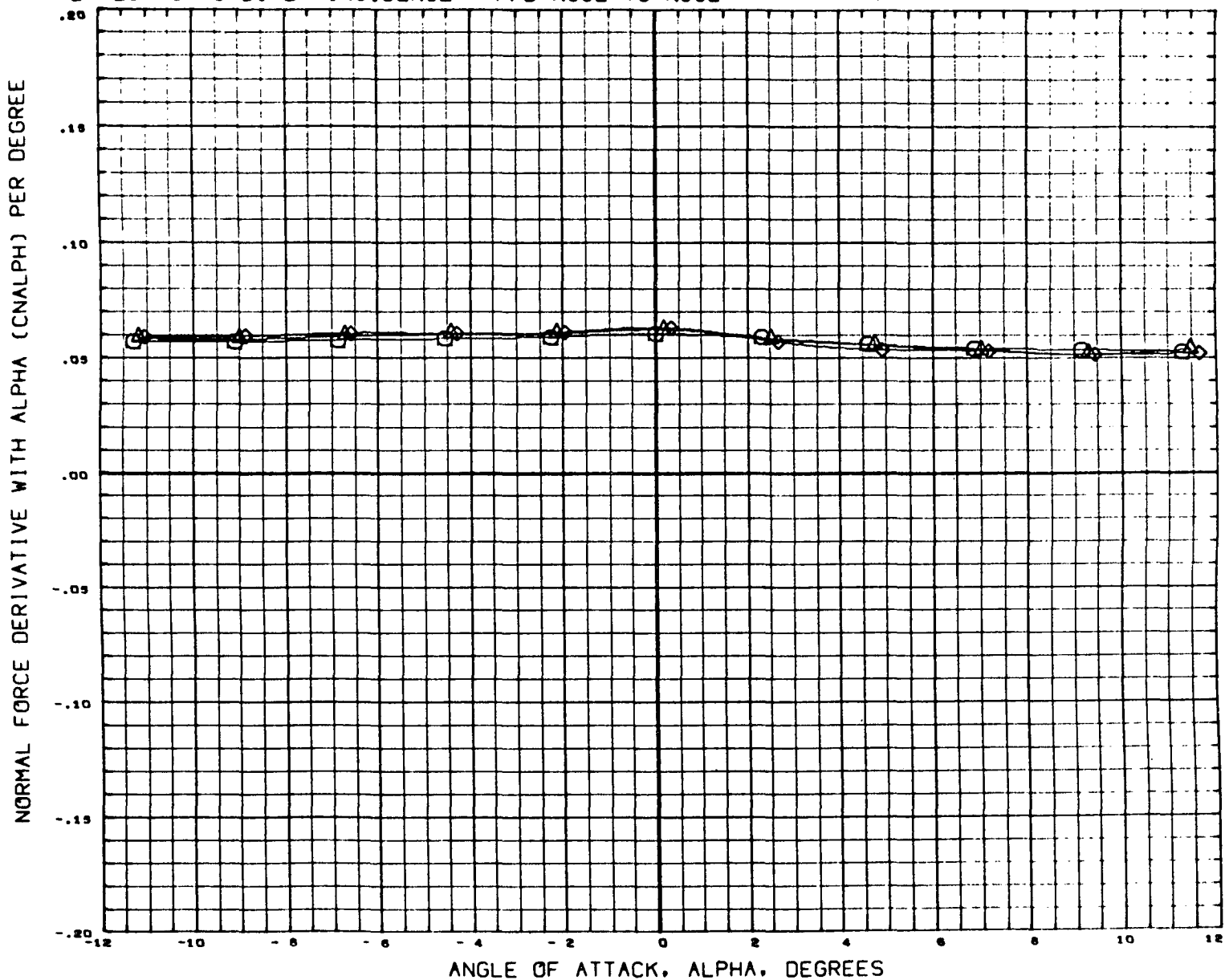


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE

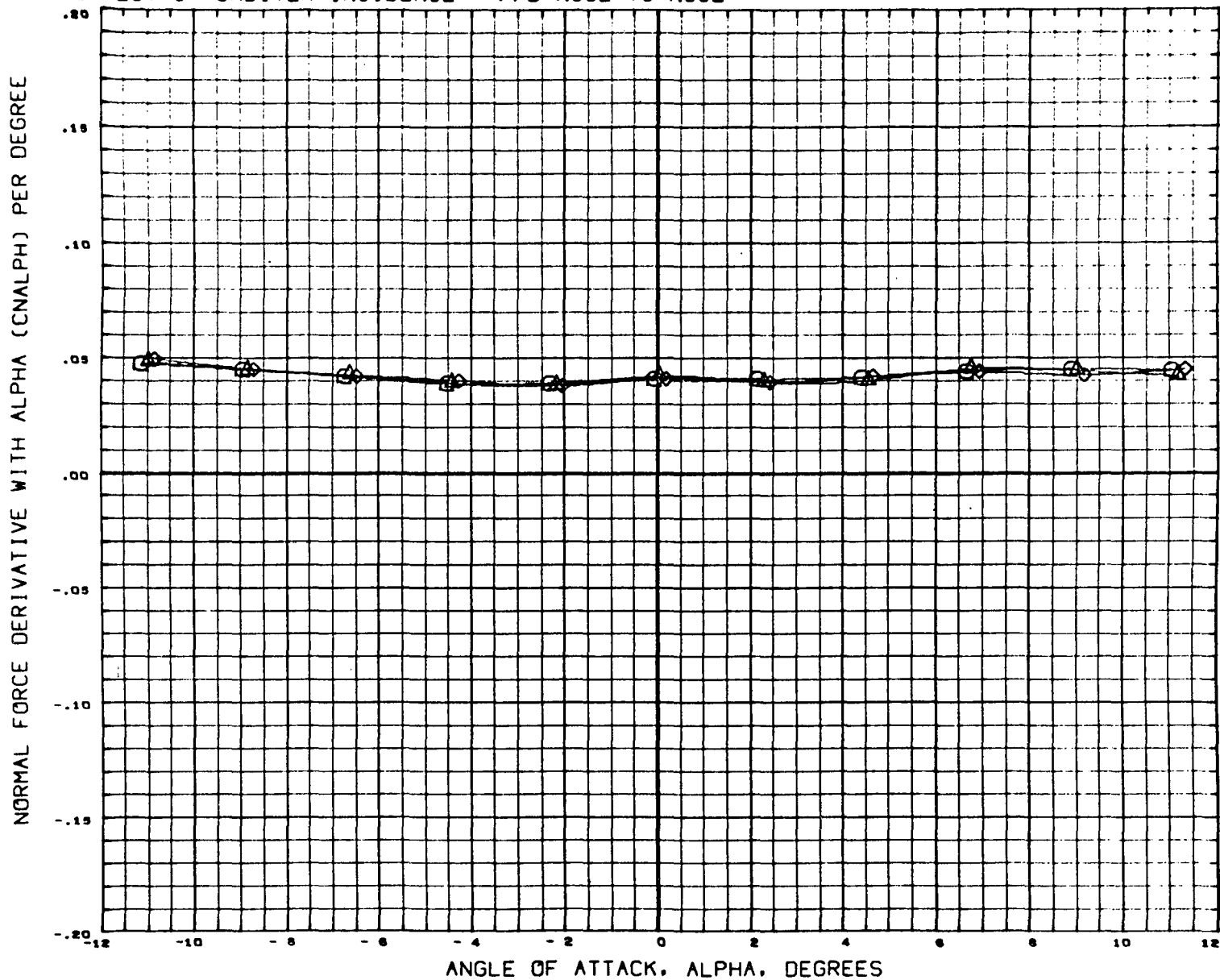


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13239A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+85W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13249A)	MSFC490 NR/GD LAUNCH B2014BW14V8+85W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0039 SCALE

MACH 1.47

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13239A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSFC490 NR/GD LAUNCH B20Z4BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(13240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

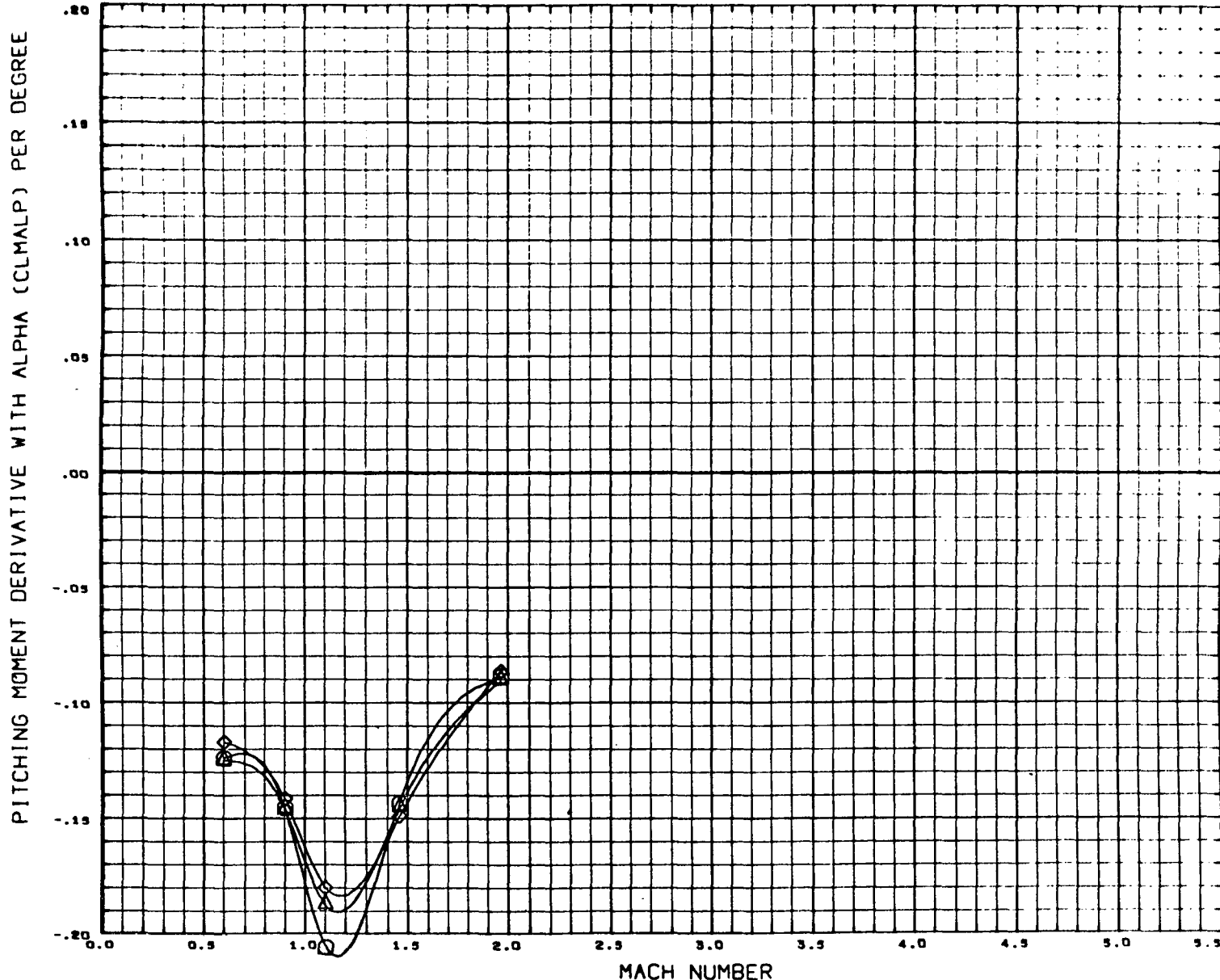
MACH

1.95

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J323AA)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(J3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B3W17V17
(J3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17

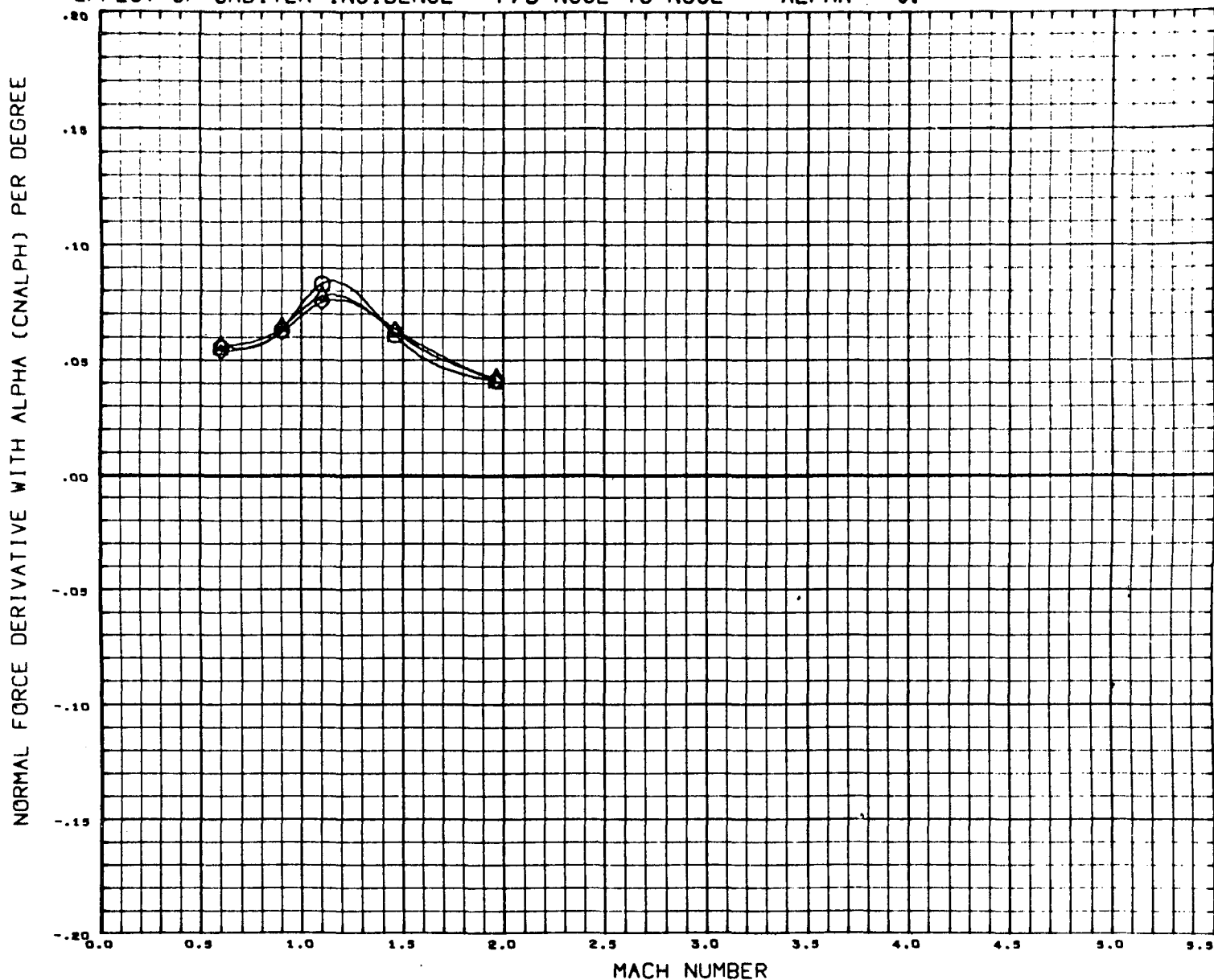
MACH NUMBER

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	2.000	0.000	0.000	SREF	15.6360 SQ IN
2.000	2.000	0.000	0.000	LREF	3.0990 INCHES
4.000	2.000	0.000	0.000	BREF	0.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE ALPHA = 0.

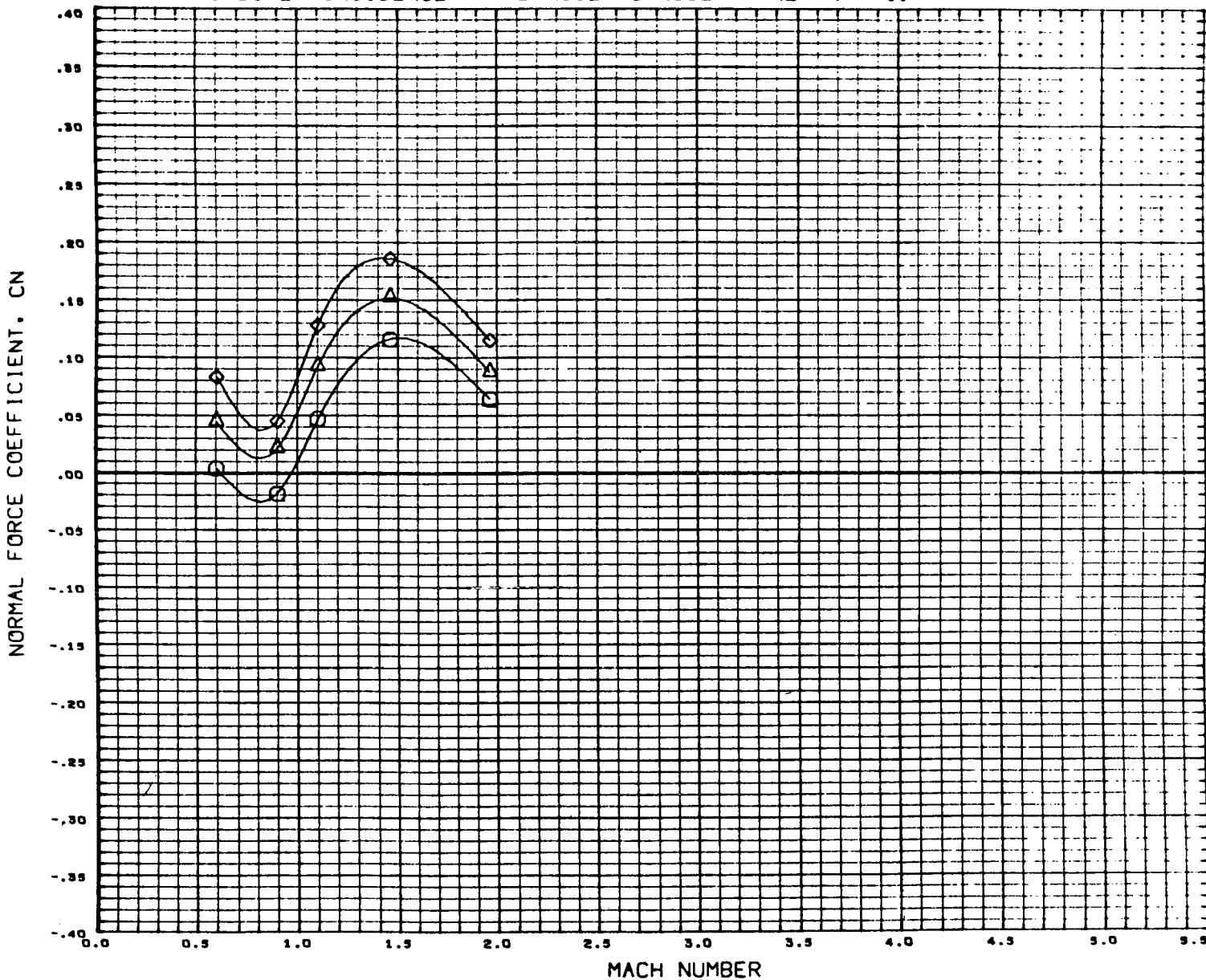


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(J3239A)	MSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 SQ IN
(J3239A)	MSFC490 NR/GD LAUNCH B20248W14V6+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(J3240A)	MSFC490 NR/GD LAUNCH B20148W14V6+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

ALPHA .00

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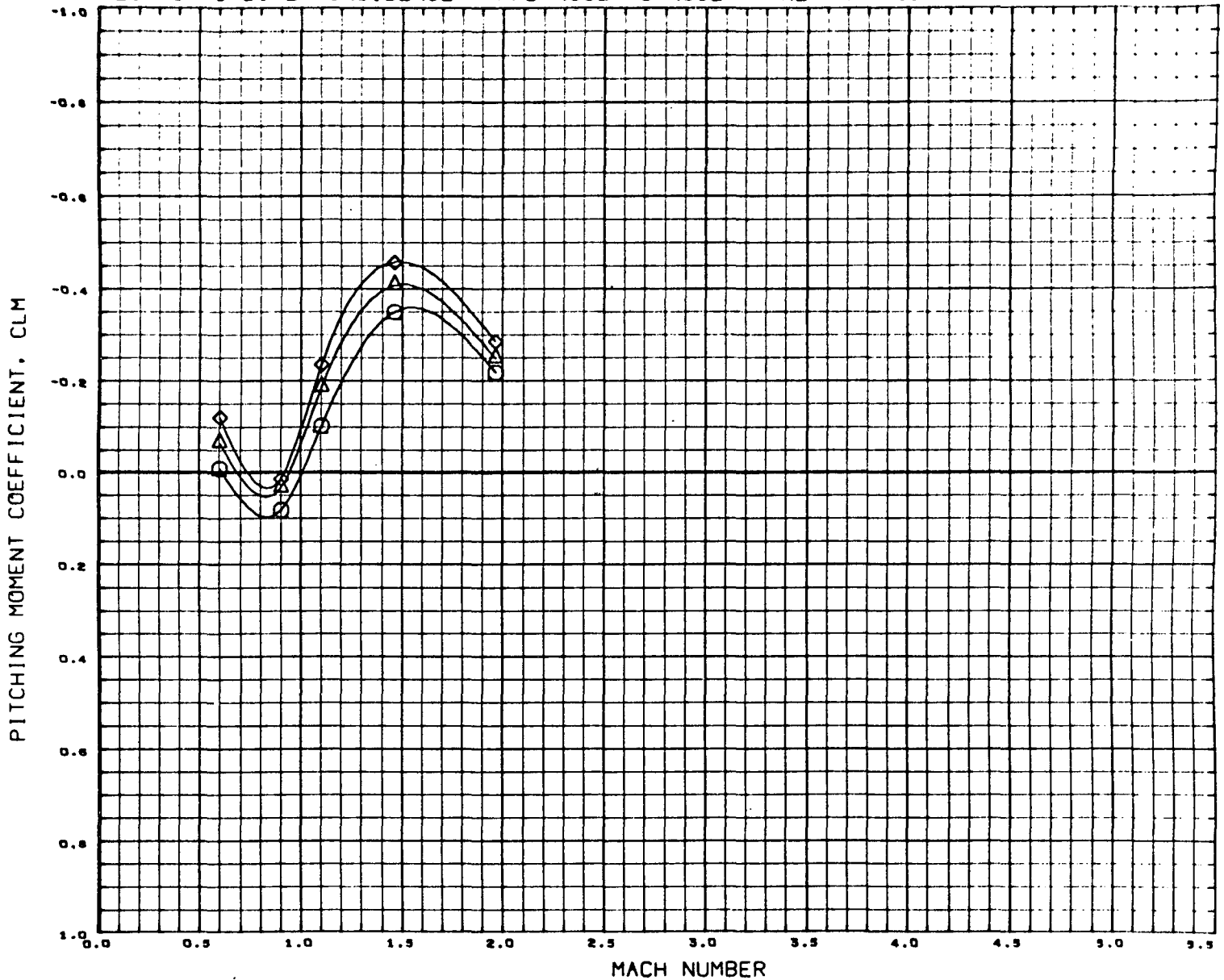
EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(K3238A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	SREF	15.6560 SQ IN
(K3239A)	MSFC490 NR/GD LAUNCH 82024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(K3240A)	MSFC490 NR/GD LAUNCH 82014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

ALPHA .00

EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE ALPHA = 0.

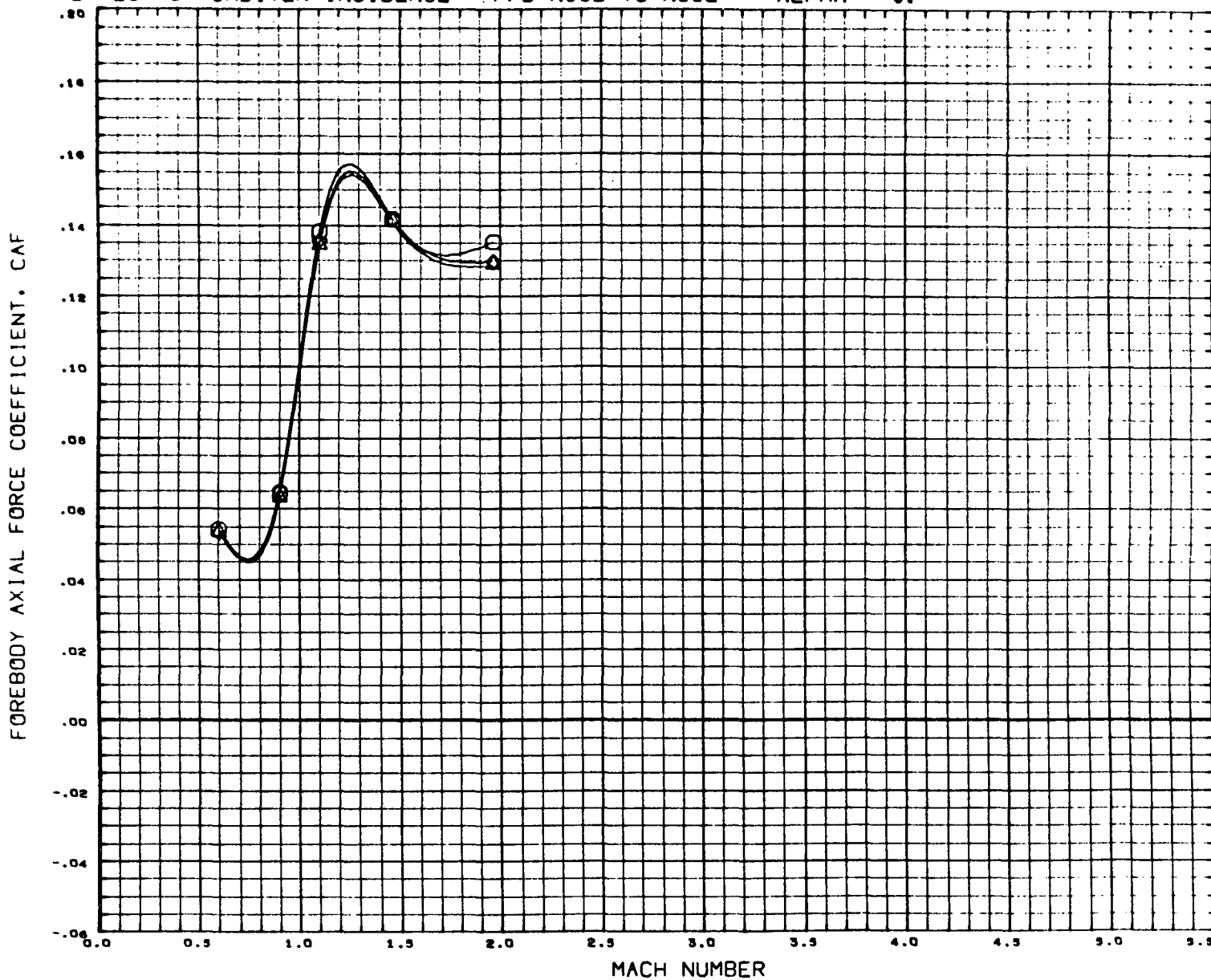


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K3239A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(K3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B3W17V17
(K3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	2.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	2.000	0.000	0.000	LREF	3.0990 INCHES
4.000	2.000	0.000	0.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

EFFECT OF ORBITER INCIDENCE - P/B NOSE TO NOSE ALPHA = 0.

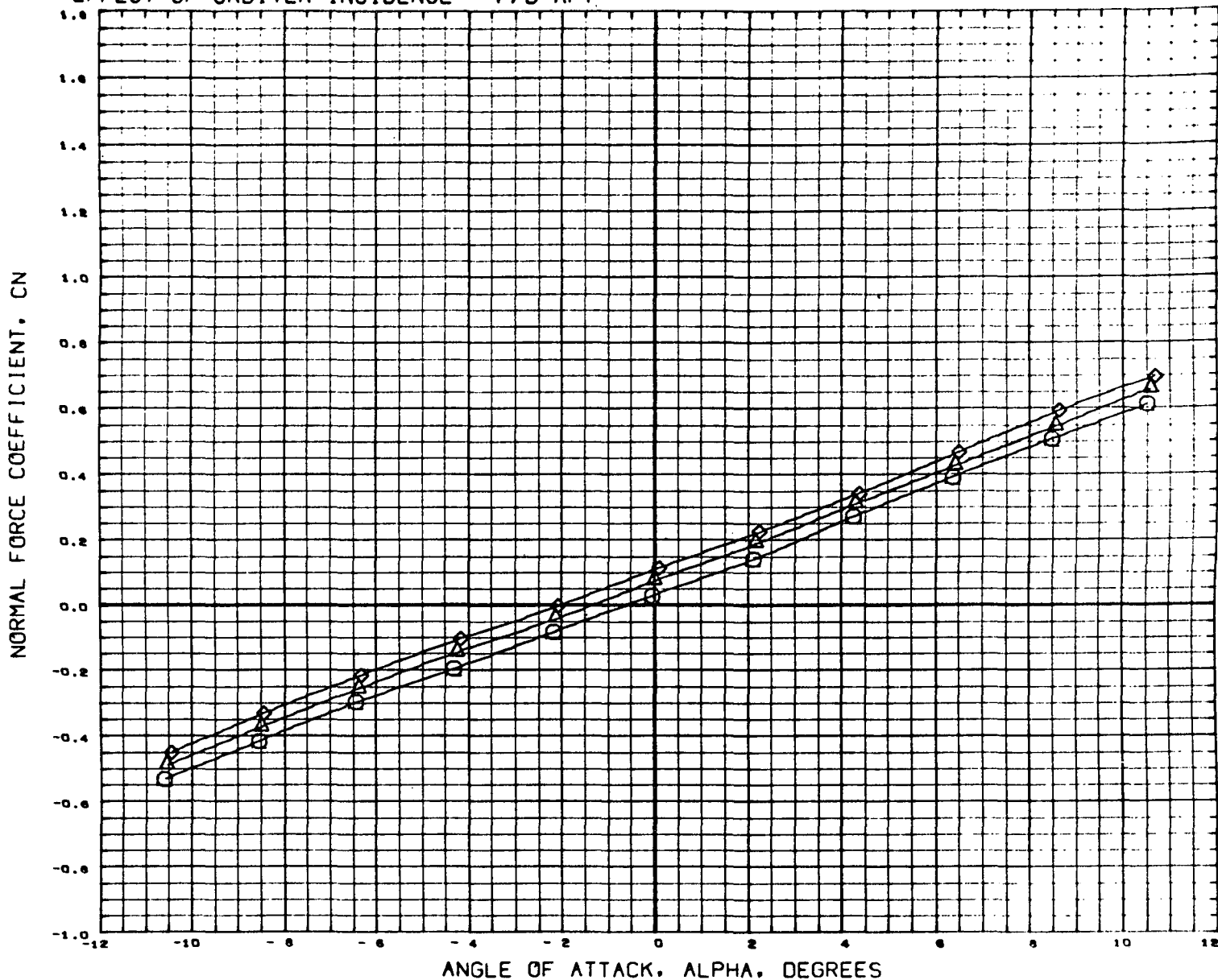


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(K3238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	2.000	0.000	0.000	SREF	15.6560
(K3239A)	MSFC490 NR/GD LAUNCH B20Z4BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0930
(K3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	4.000	2.000	0.000	0.000	BREF	6.0990
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033
							SCALE

ALPHA .00

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EFFECT OF ORBITER INCIDENCE - P/B AFT

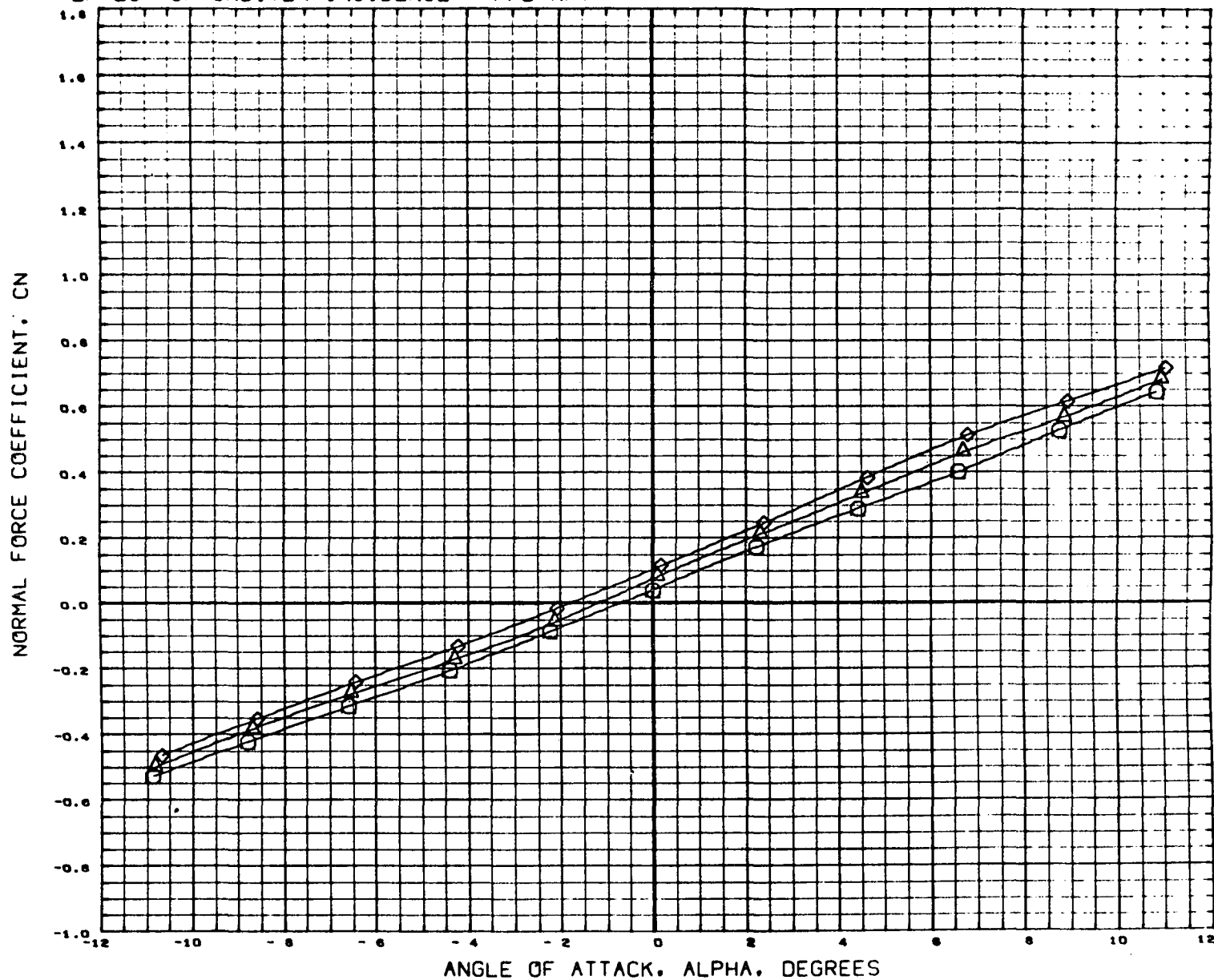


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560 30 IN
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B AFT

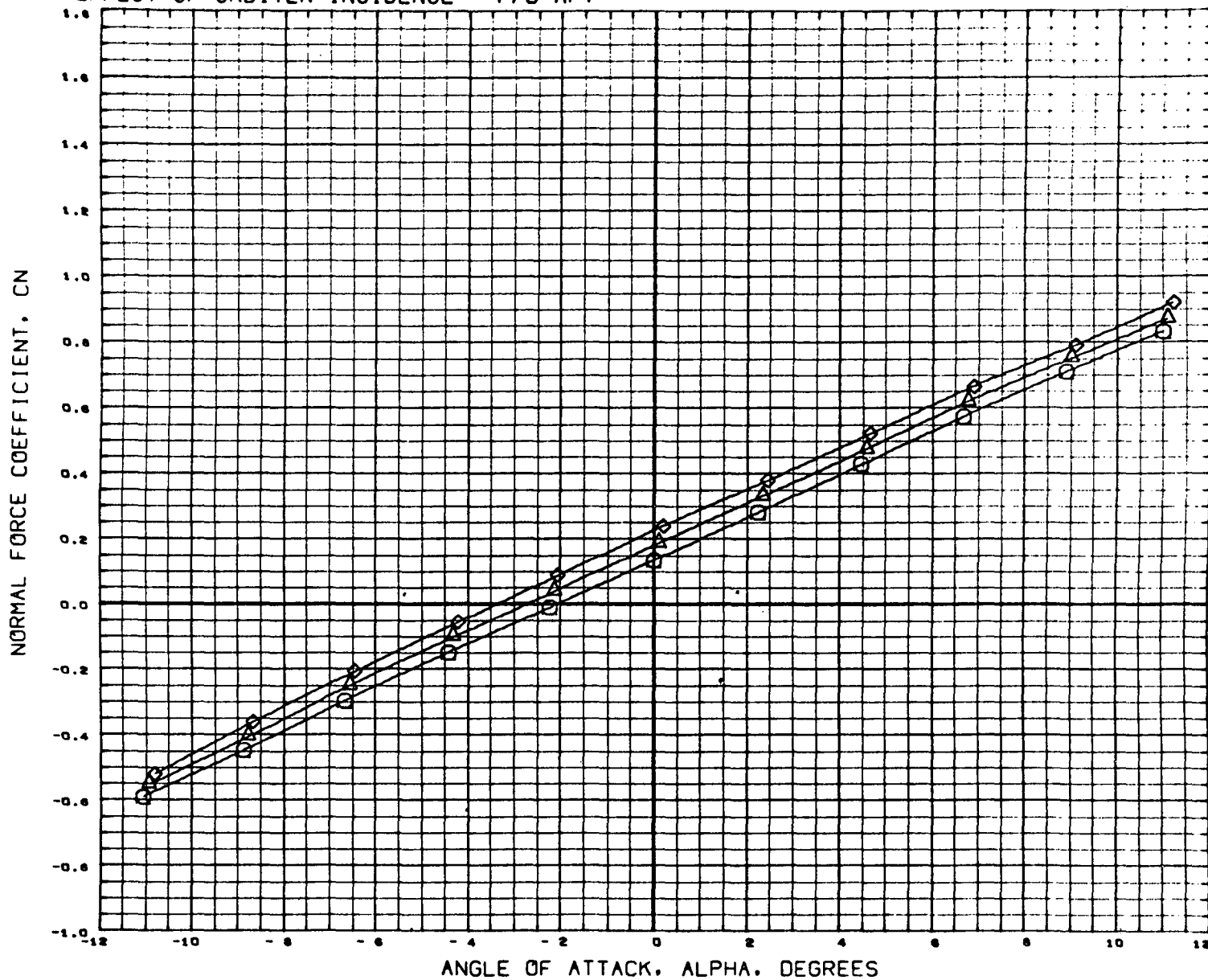


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	0.000	3.000	0.000	0.000	SREF	15.6560	50 IN
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	3.000	0.000	0.000	LREF	3.0950	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B AFT

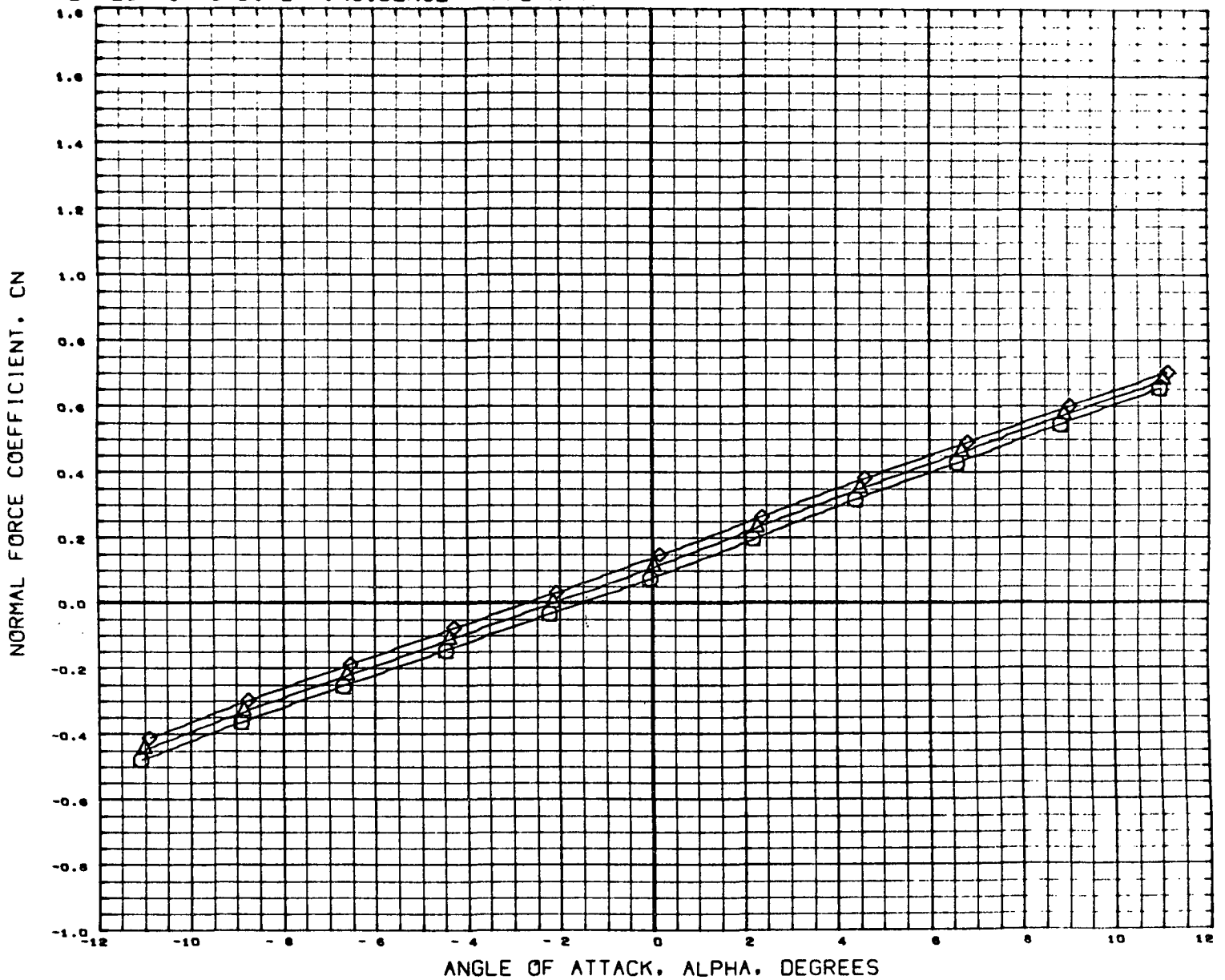


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	13.6560 SQ IN
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

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EFFECT OF ORBITER INCIDENCE - P/B AFT

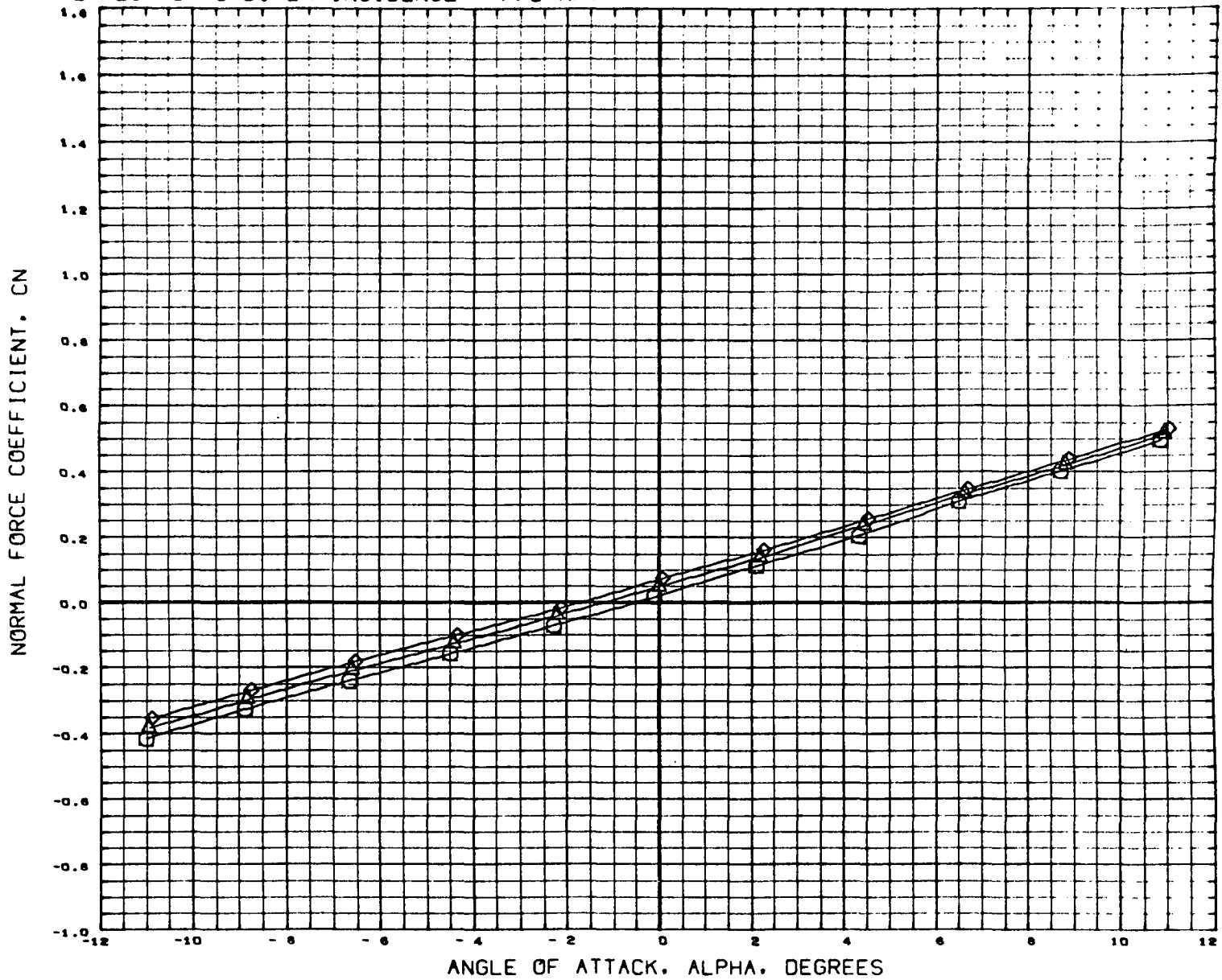


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B35W17V17	0.000	3.000	0.000	0.000	SREF	15.6560 30 IN
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B35W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B35W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

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EFFECT OF ORBITER INCIDENCE - P/B AFT

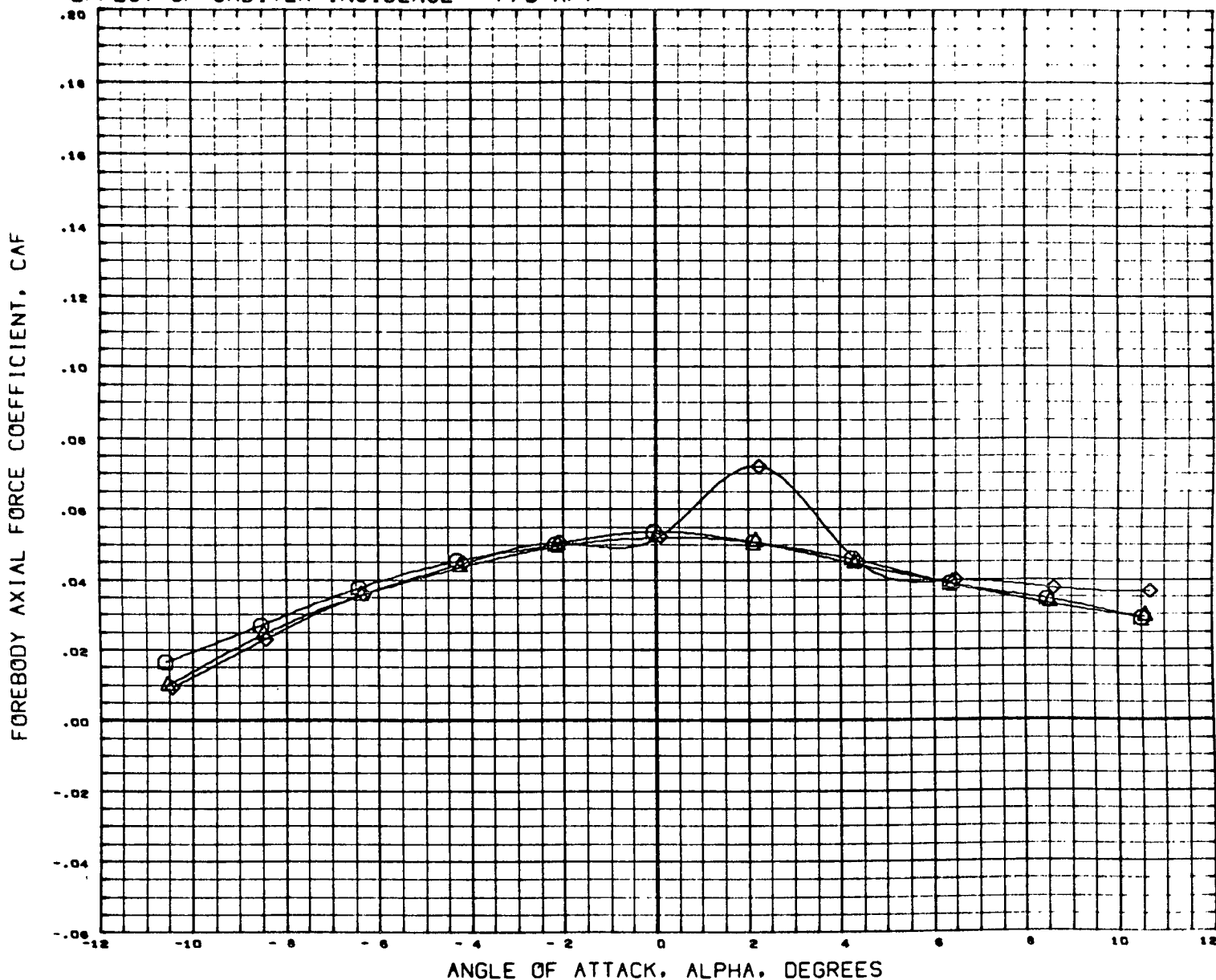


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560 SQ IN
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B AFT

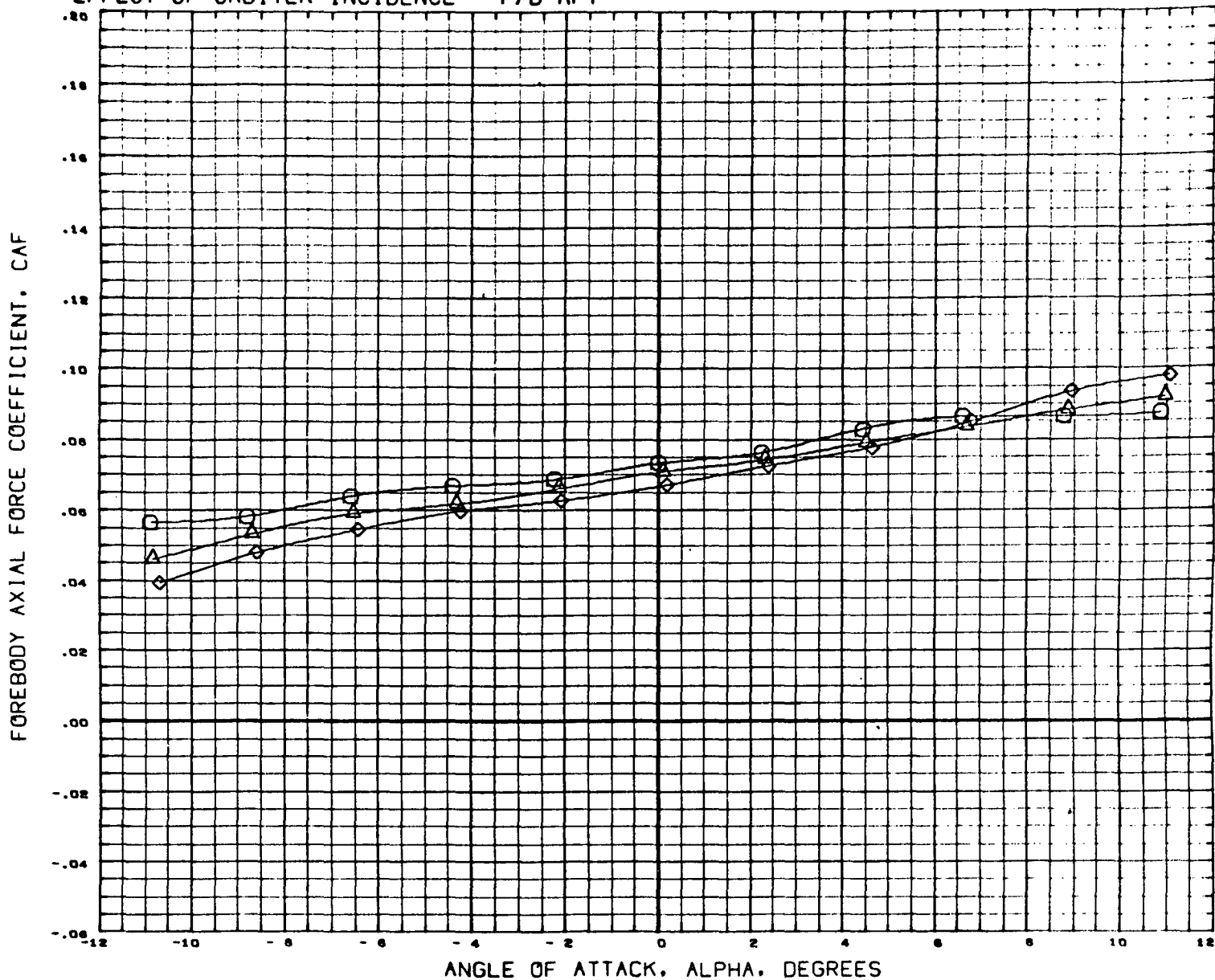


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(H3243A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B AFT

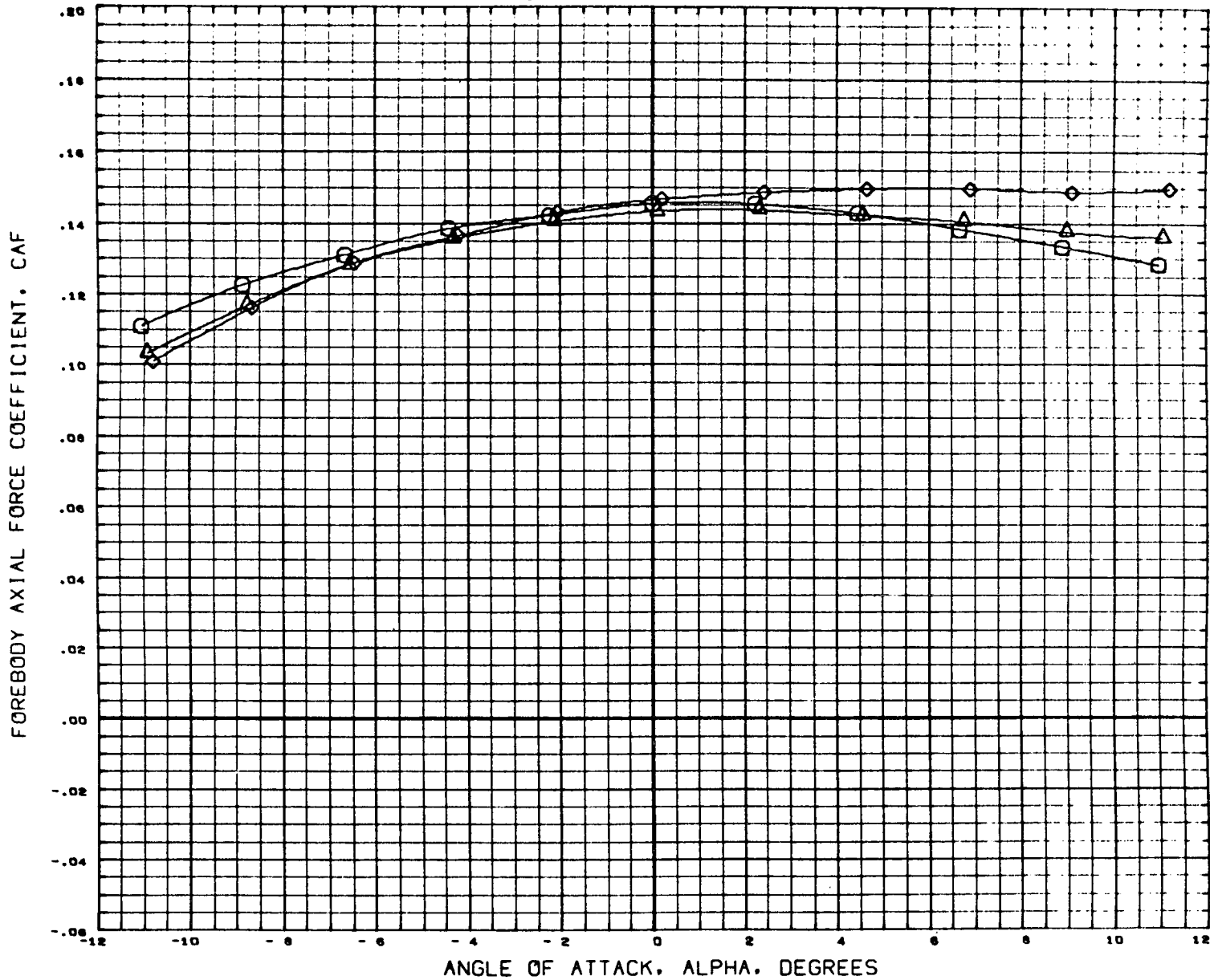


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(H3243A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B35W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B35W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B AFT



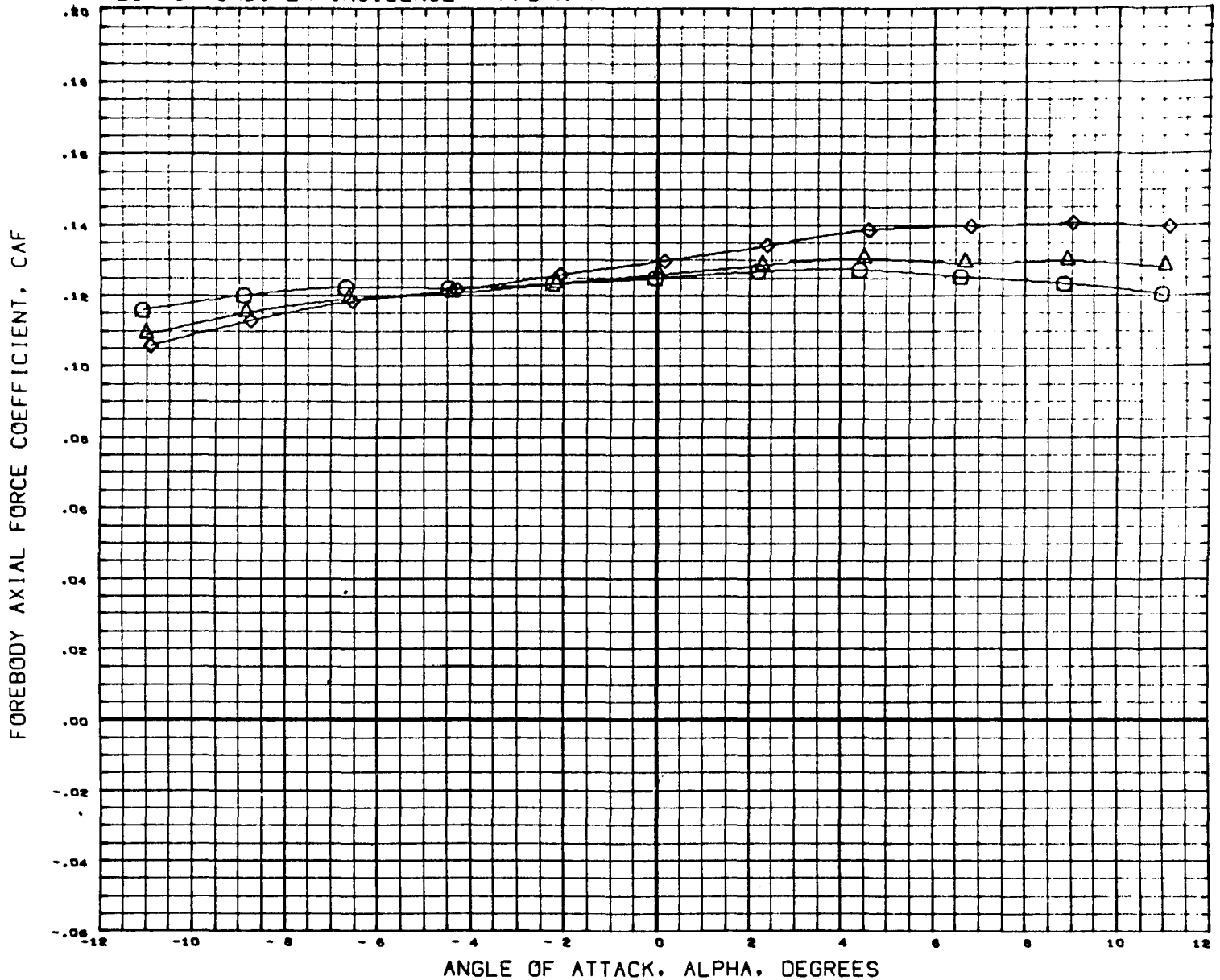
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(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						SCALE	0.0035 SCALE

MACH 1.10

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EFFECT OF ORBITER INCIDENCE - P/B AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560 SQ IN
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0990 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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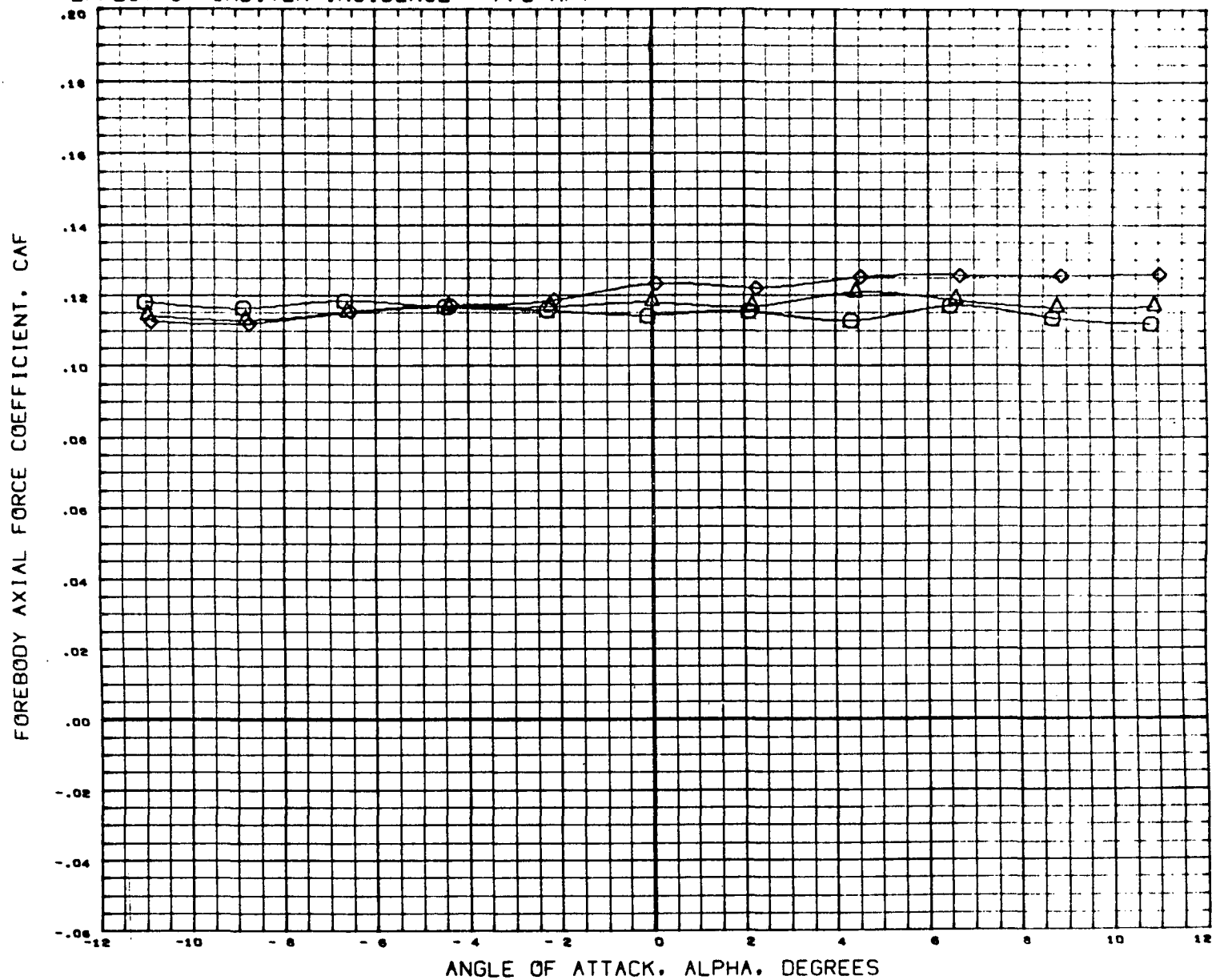
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49

EFFECT OF ORBITER INCIDENCE - P/B AFT

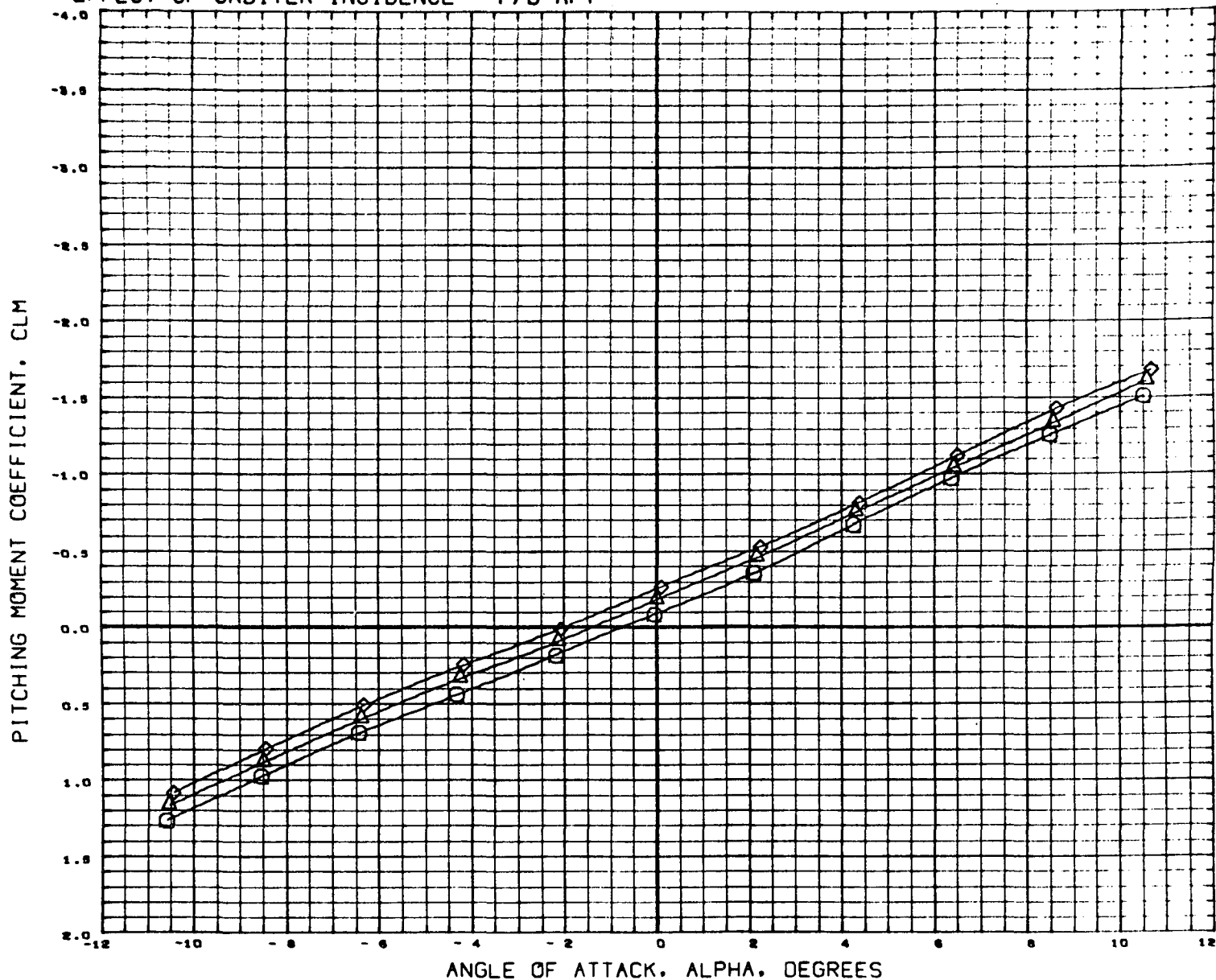


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(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B AFT

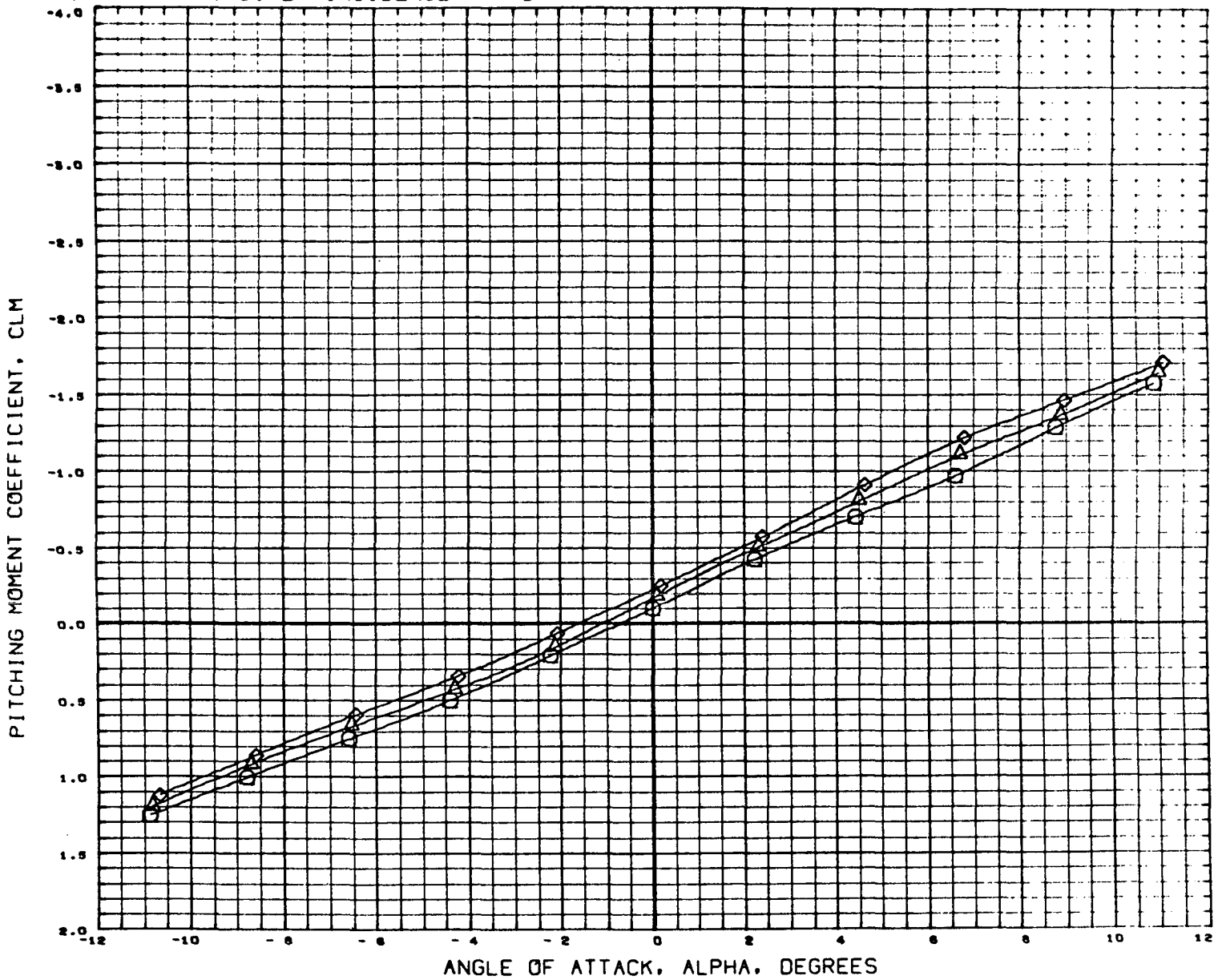


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(H3243A)	MSFC490 NR/GD LAUNCH B2D04BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B2D04BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B AFT

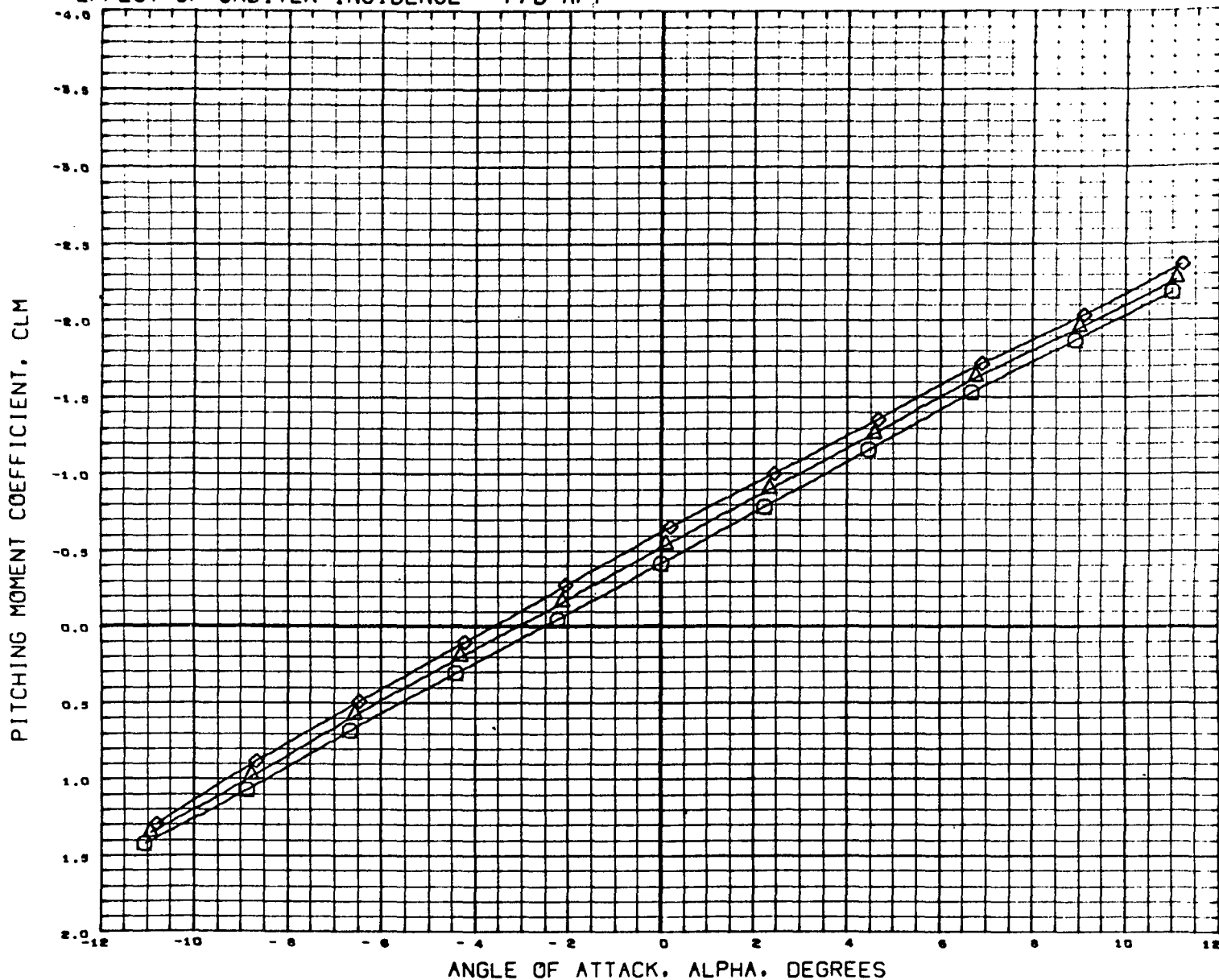


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(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560 SQ IN
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
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						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3241A) ○	MSFC490 NR/GD LAUNCH B2014BW14V8+B35W17V17
(H3243A) △	MSFC490 NR/GD LAUNCH B20C4BW14V8+B35W17V17
(H3244A) ◇	MSFC490 NR/GD LAUNCH B20C4BW14V8+B35W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	3.000	0.000	0.000	SREF	15.6360 SQ IN
2.000	3.000	0.000	0.000	LREF	3.0990 INCHES
4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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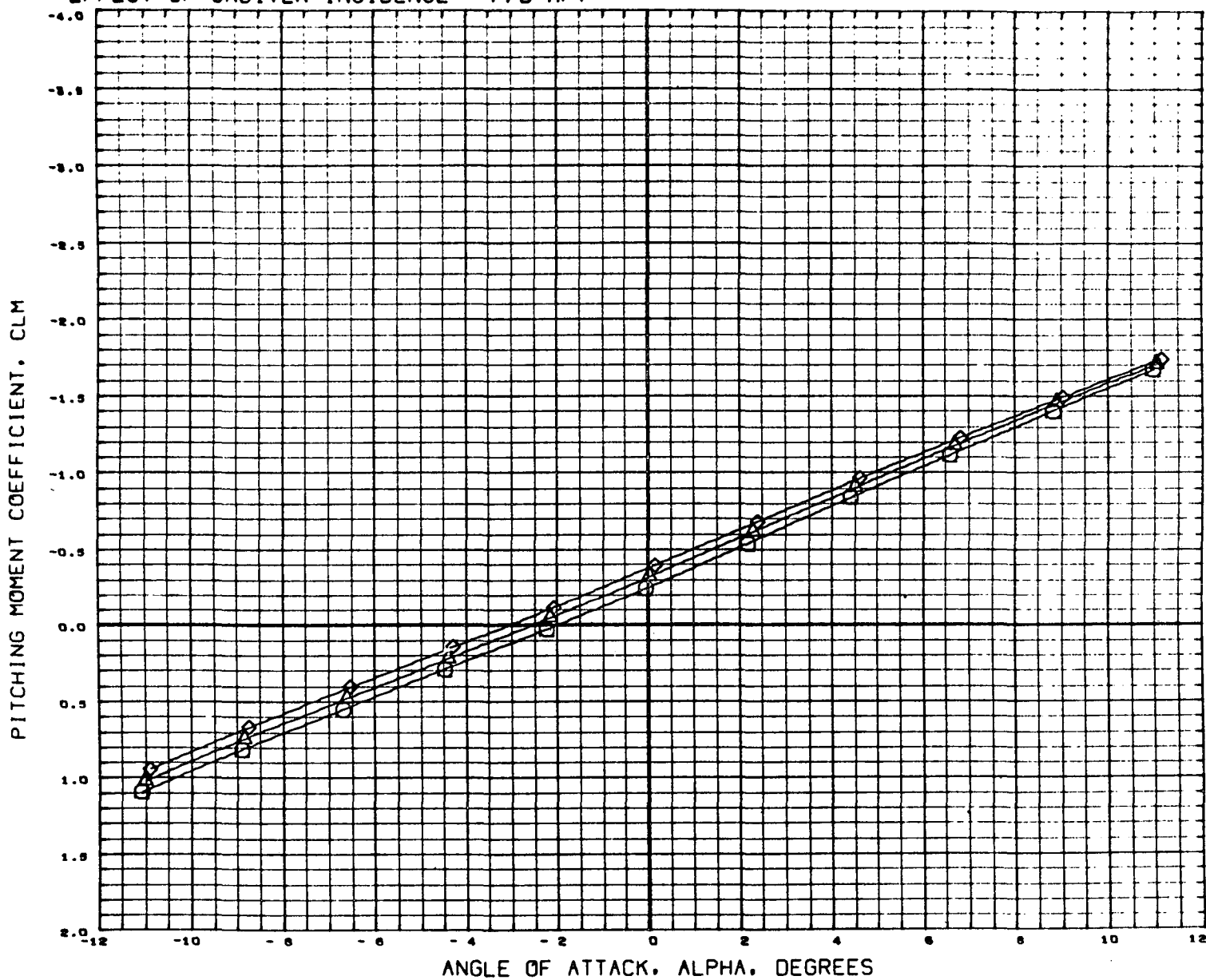
MACH

1.10

PAGE

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EFFECT OF ORBITER INCIDENCE - P/B AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	0.000	3.000	0.000	0.000	SREF	15.6560 SQ IN
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
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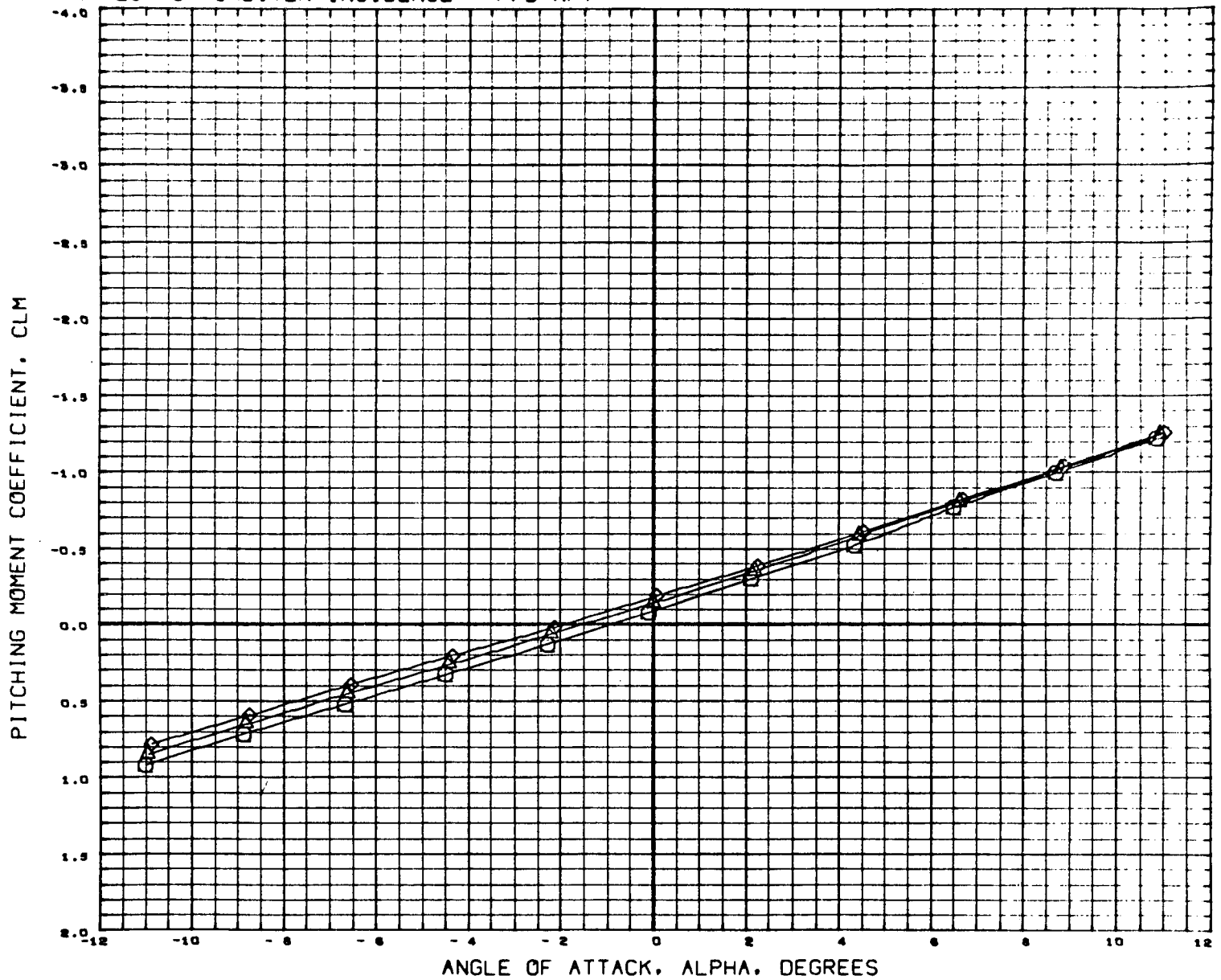
MACH

1.46

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EFFECT OF ORBITER INCIDENCE - P/B AFT

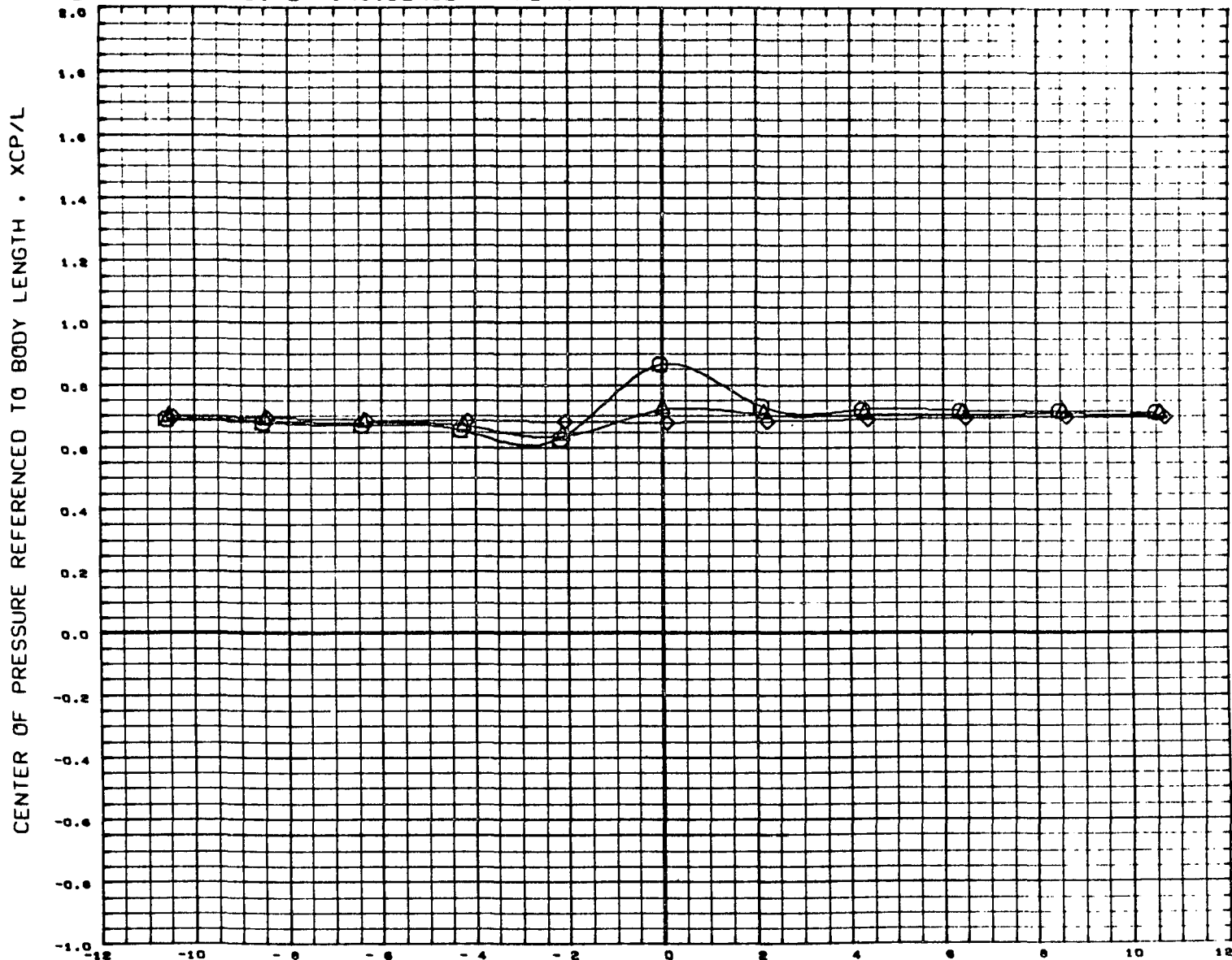


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(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
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MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B AFT



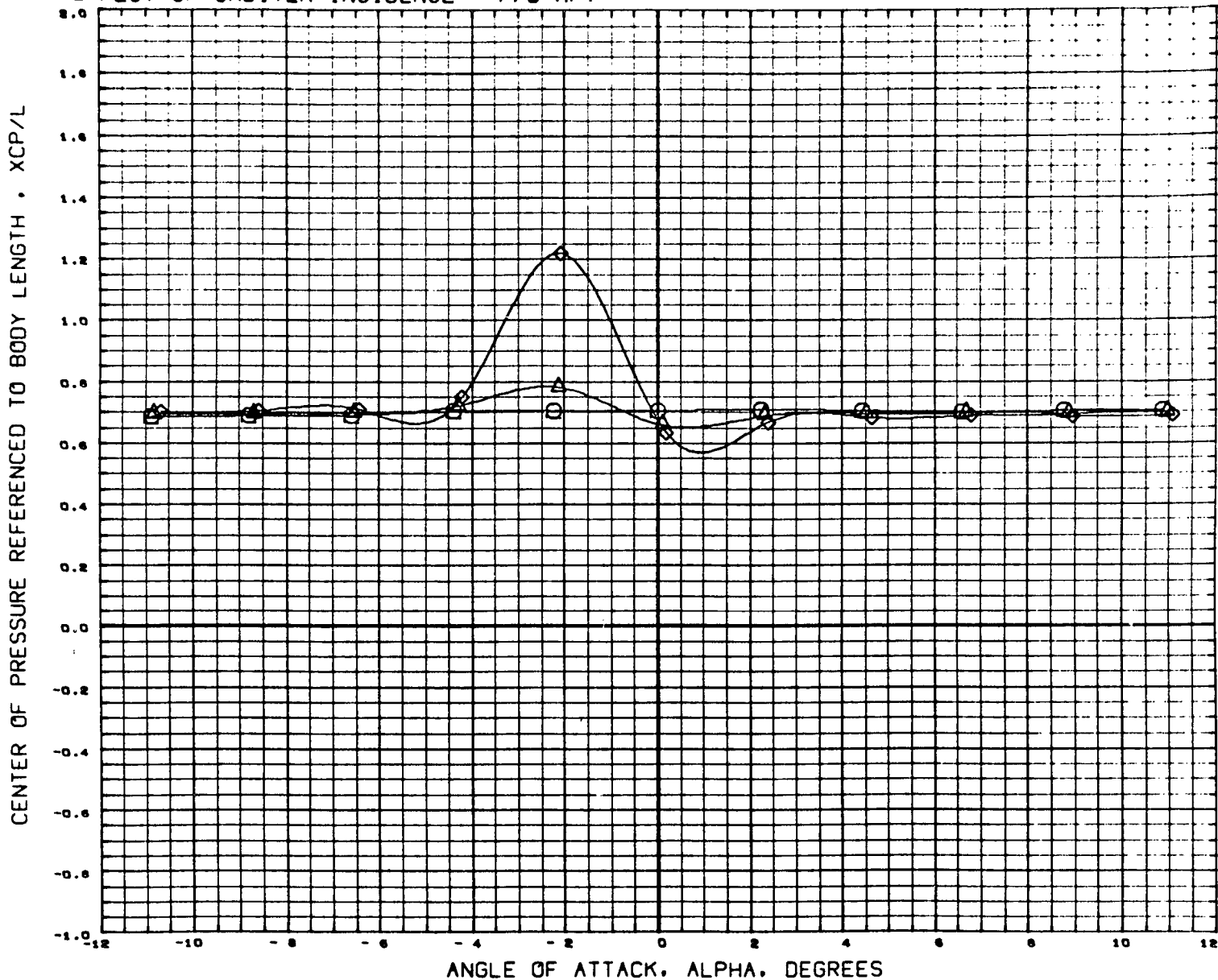
ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
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(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
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MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B AFT

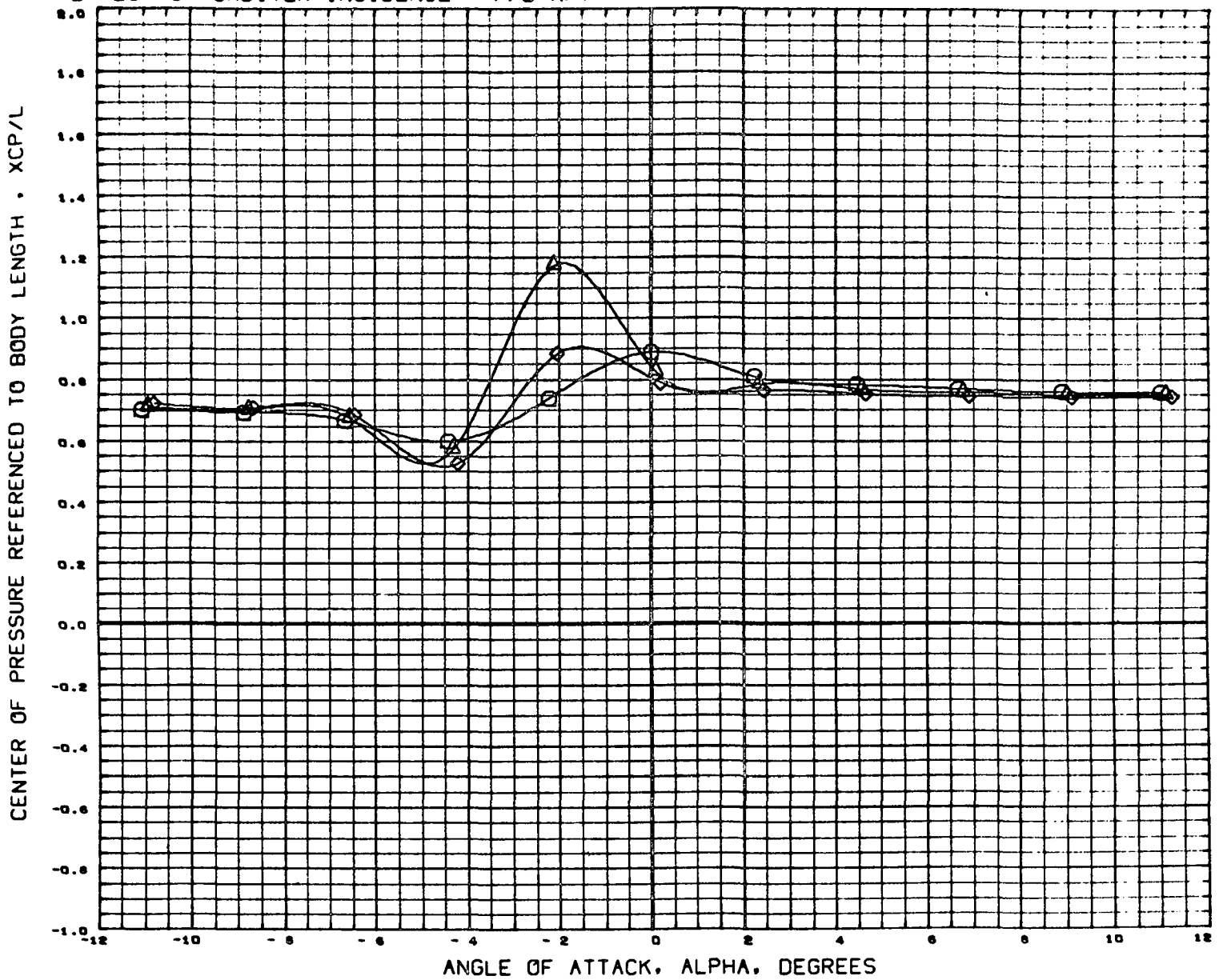


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(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
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MACH .90

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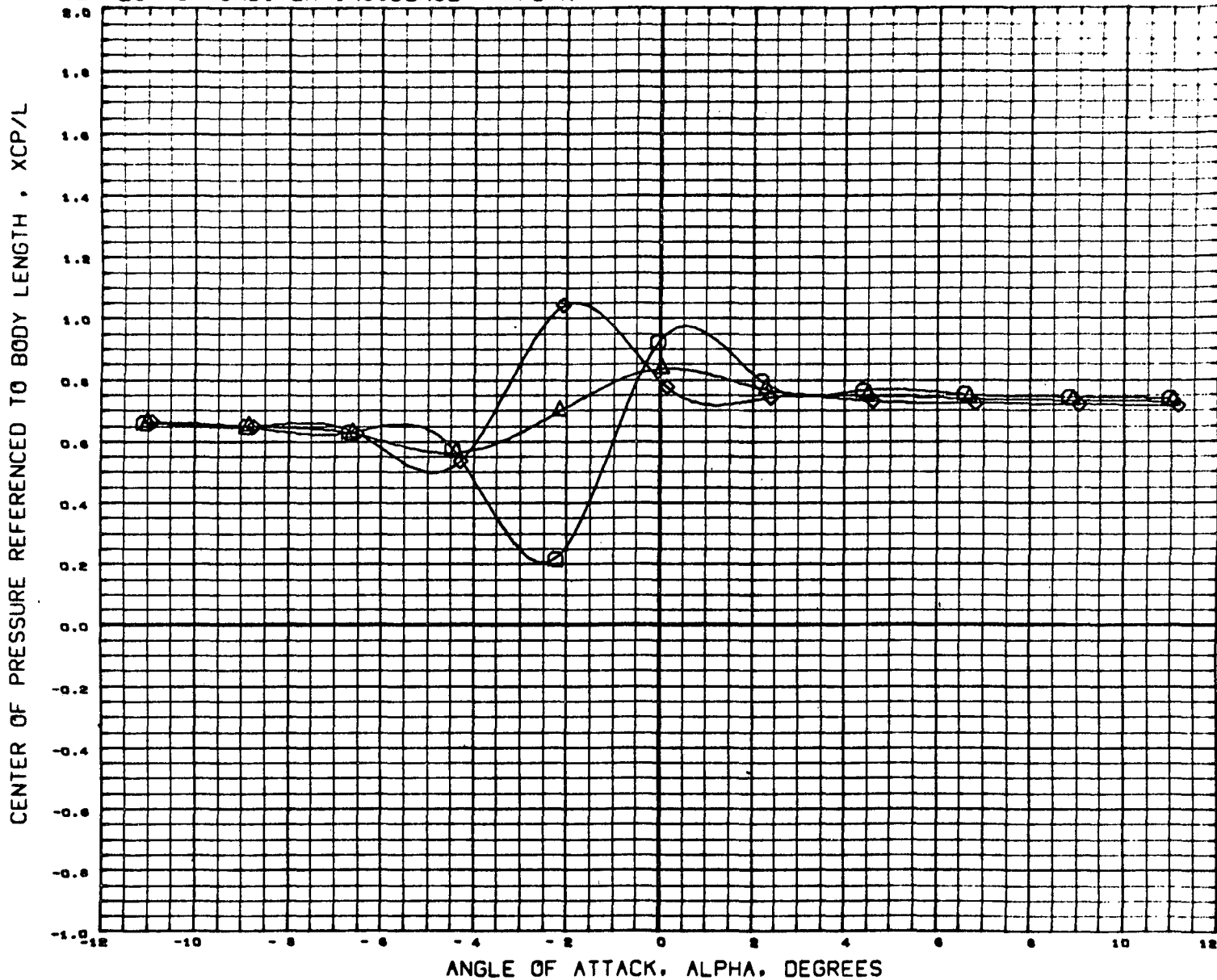
EFFECT OF ORBITER INCIDENCE - P/B AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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MACH 1.10

EFFECT OF ORBITER INCIDENCE - P/B AFT

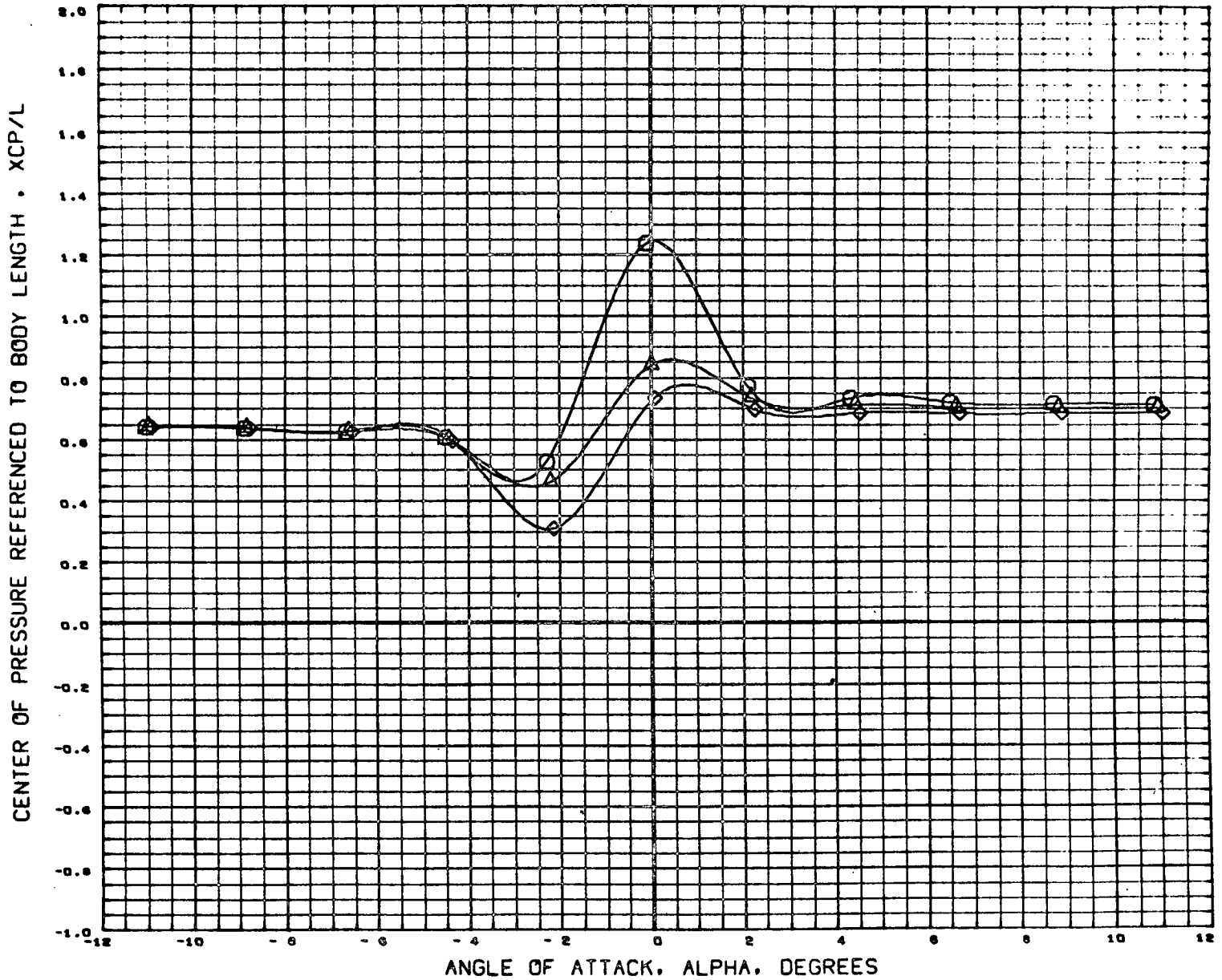


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(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560 SQ IN
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
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MACH 1.46

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EFFECT OF ORBITER INCIDENCE - P/B AFT

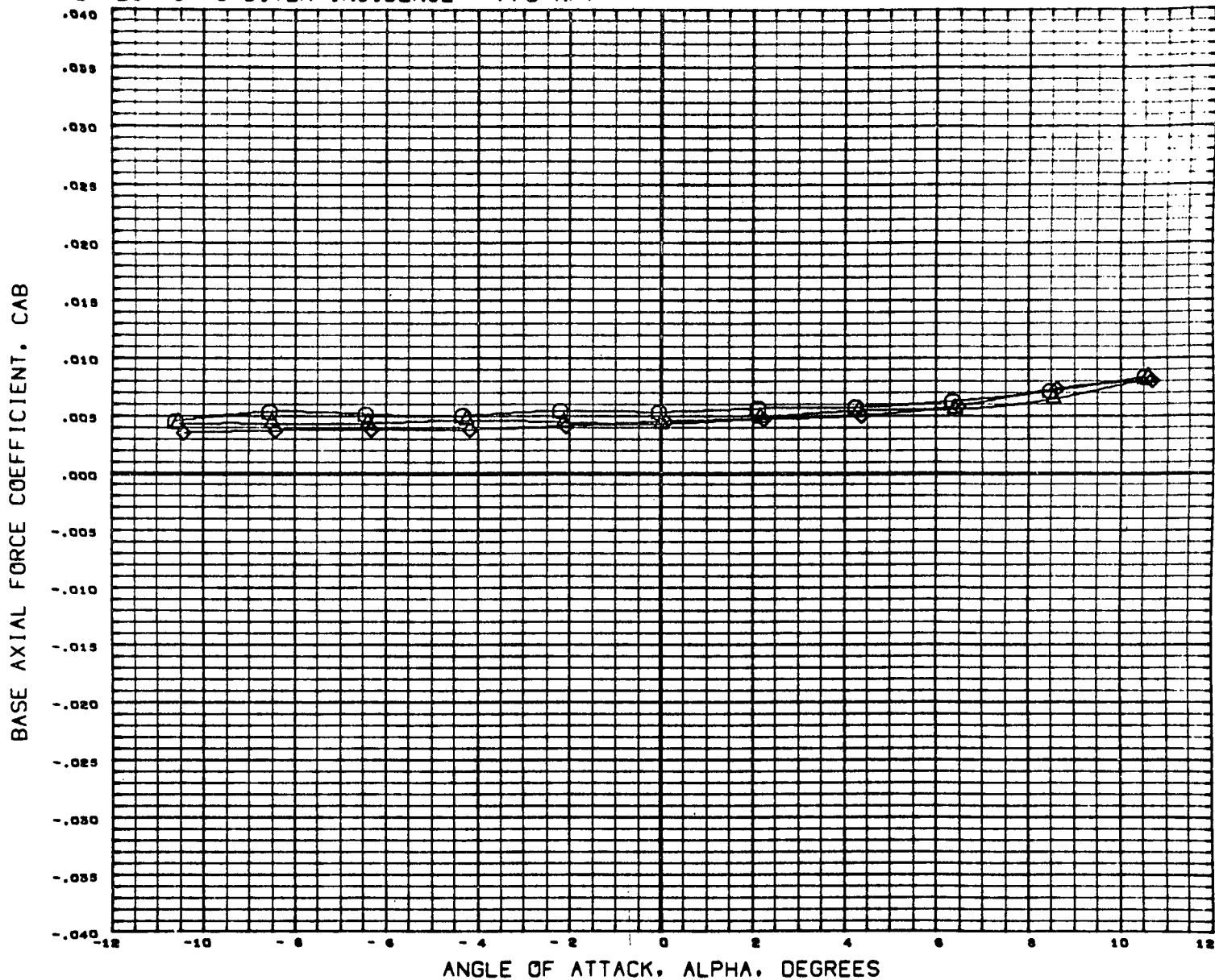


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
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(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
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						SCALE	0.0035	SCALE

MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B AFT

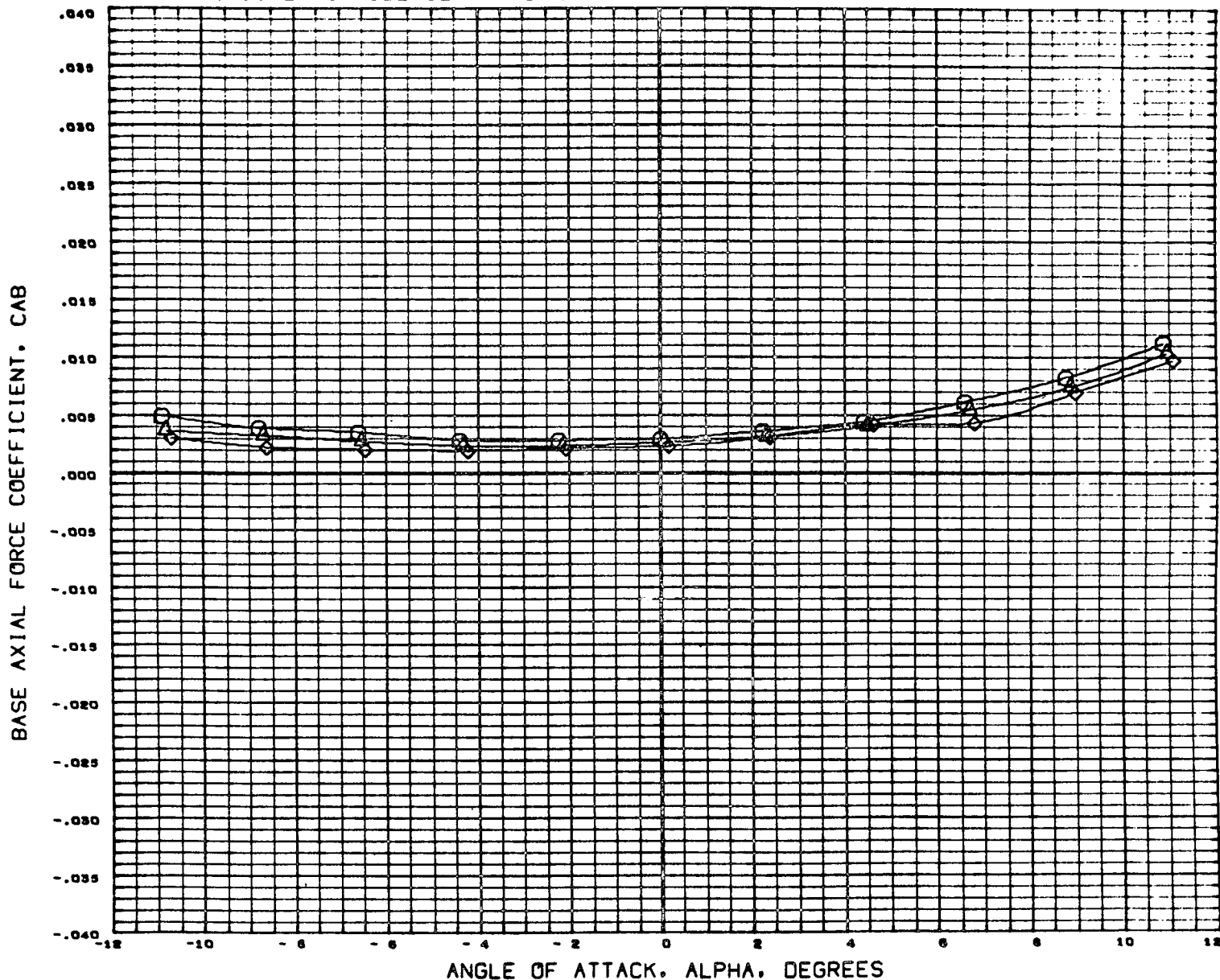


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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(H3243A)	HSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	HSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B AFT



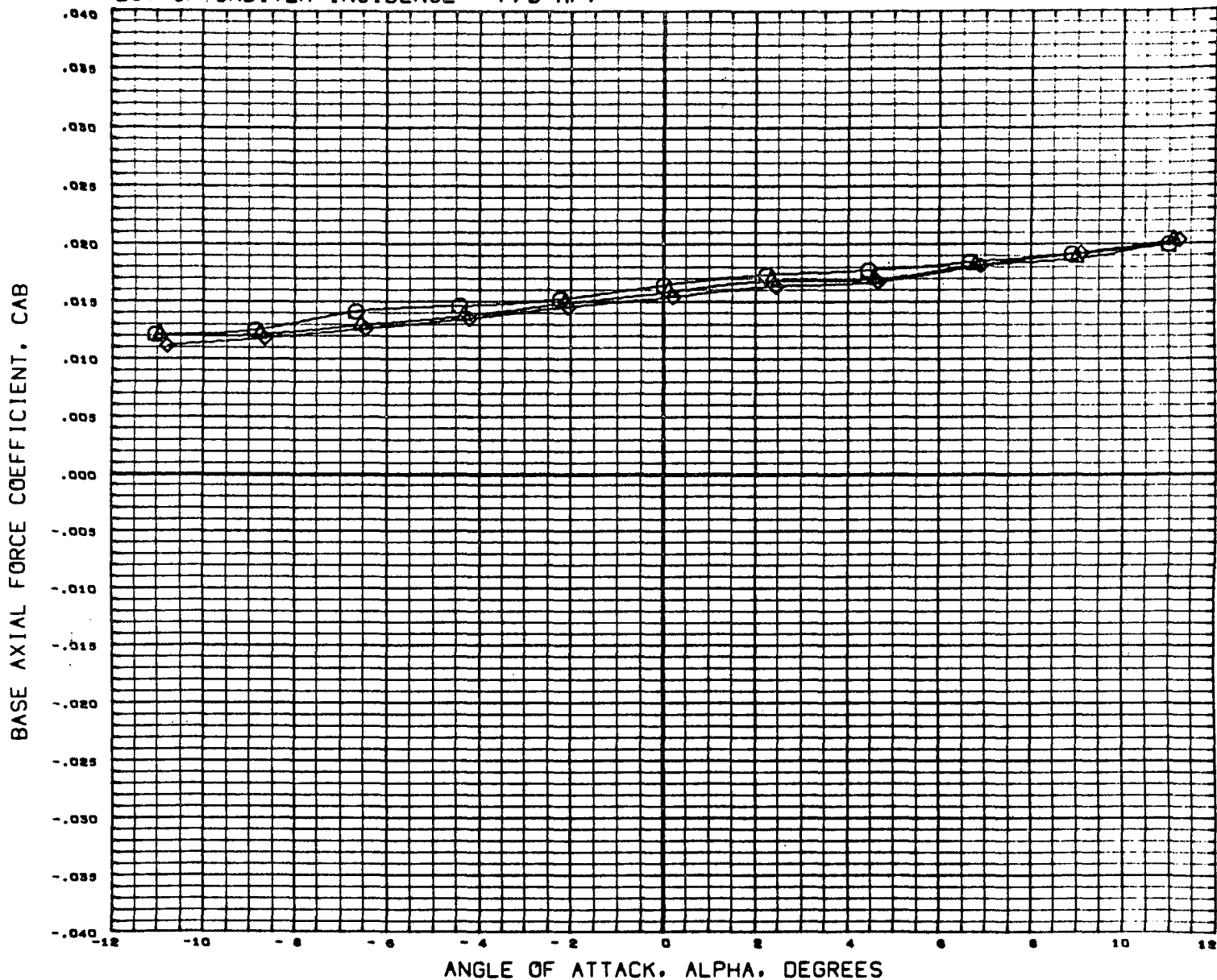
ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V0+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6360 30 IN
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0990 INCHES
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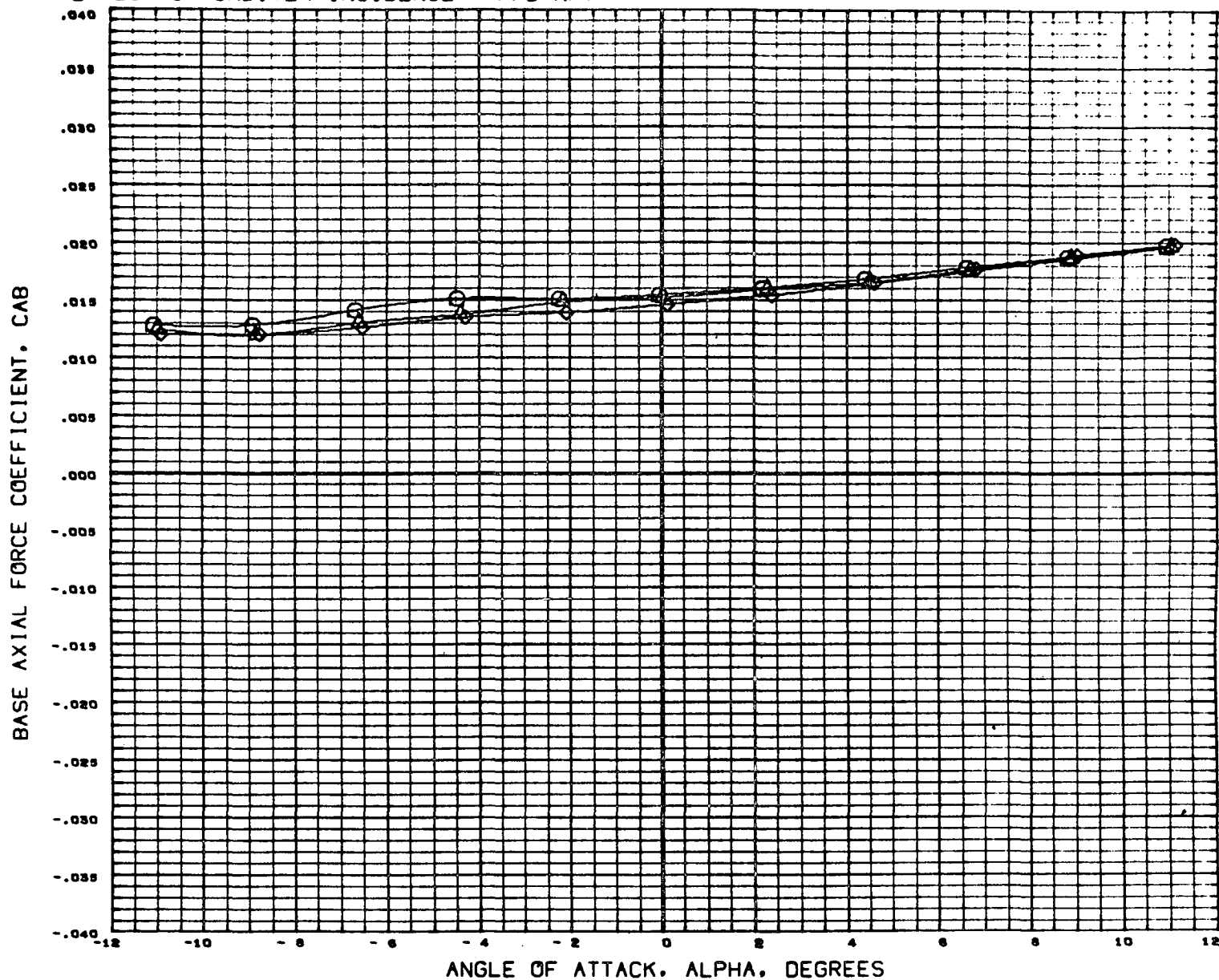
MACH

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PAGE

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EFFECT OF ORBITER INCIDENCE - P/B AFT

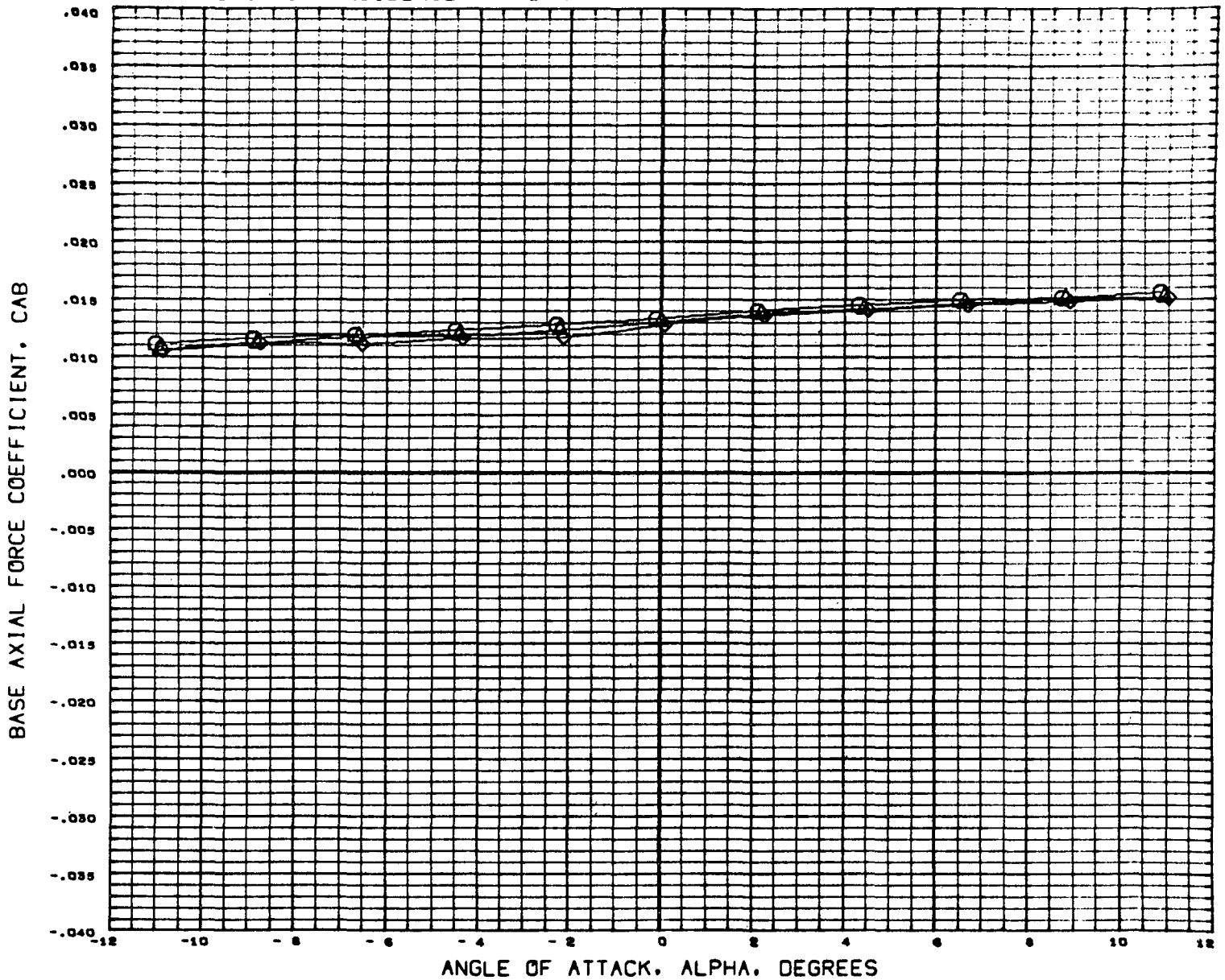


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(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	2.000	3.000	0.000	0.000	LREF	3.0950	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
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						YMRP	0.0000	
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						SCALE	0.0035	SCALE

MACH 1.46

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EFFECT OF ORBITER INCIDENCE - P/B AFT



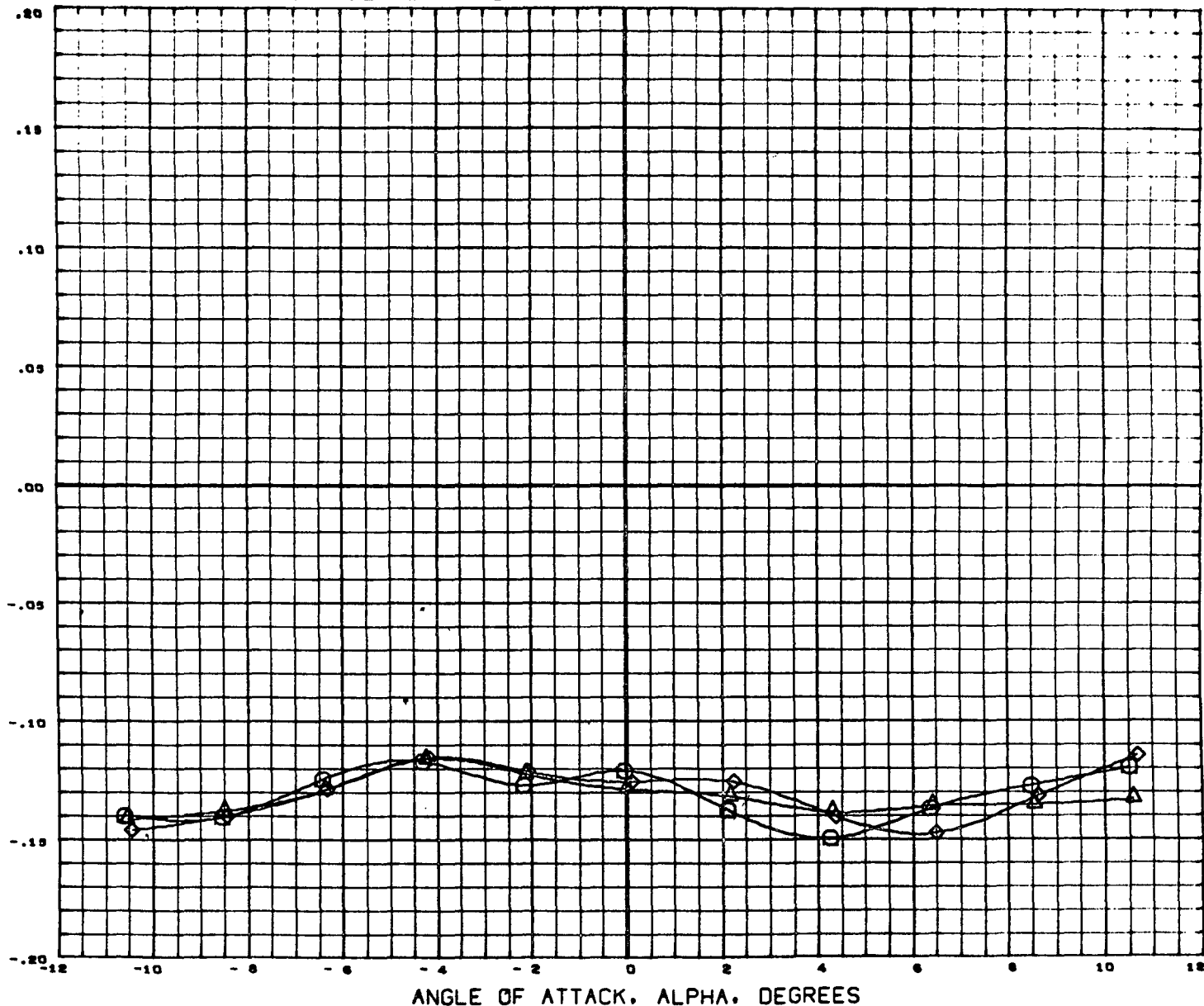
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(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B AFT

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

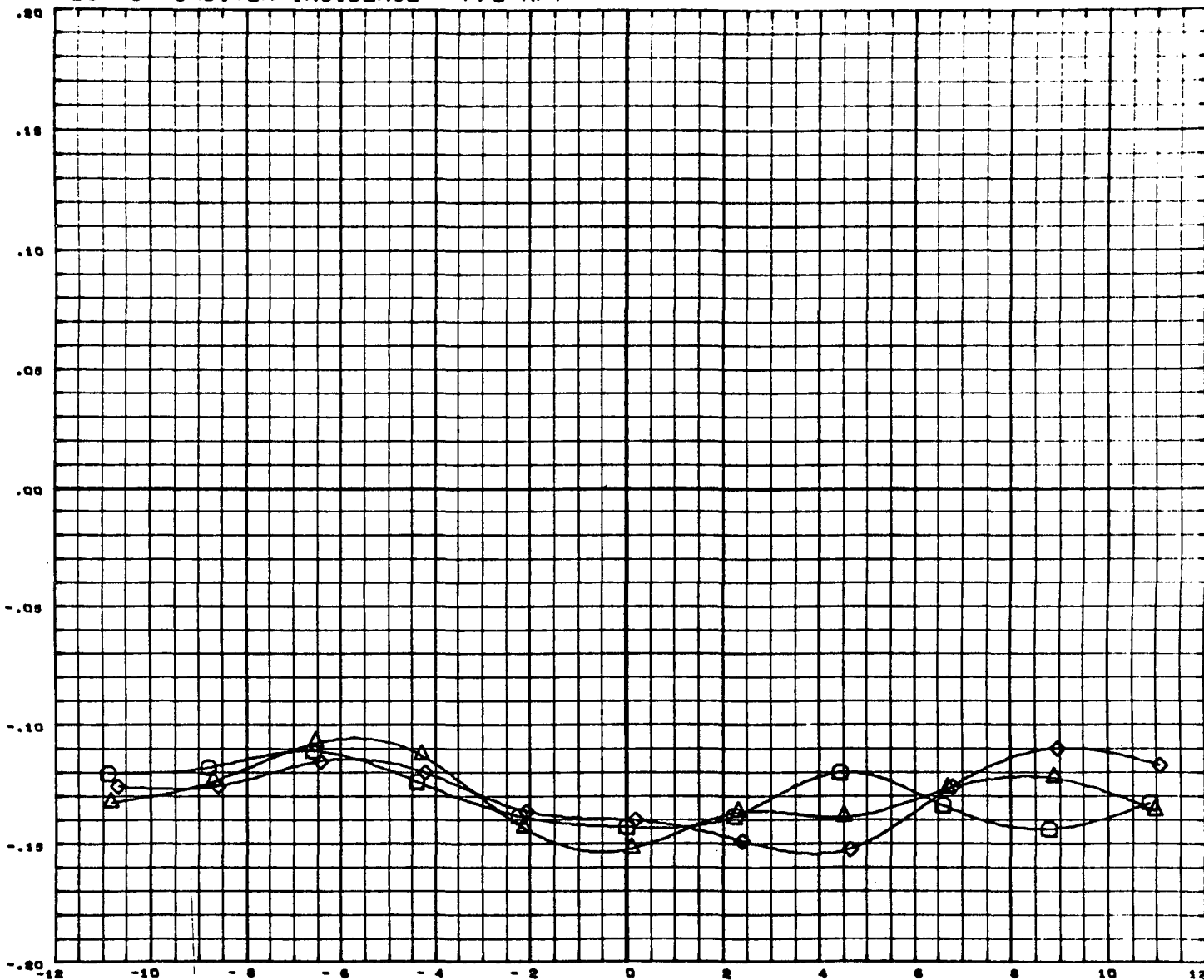
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						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B AFT

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

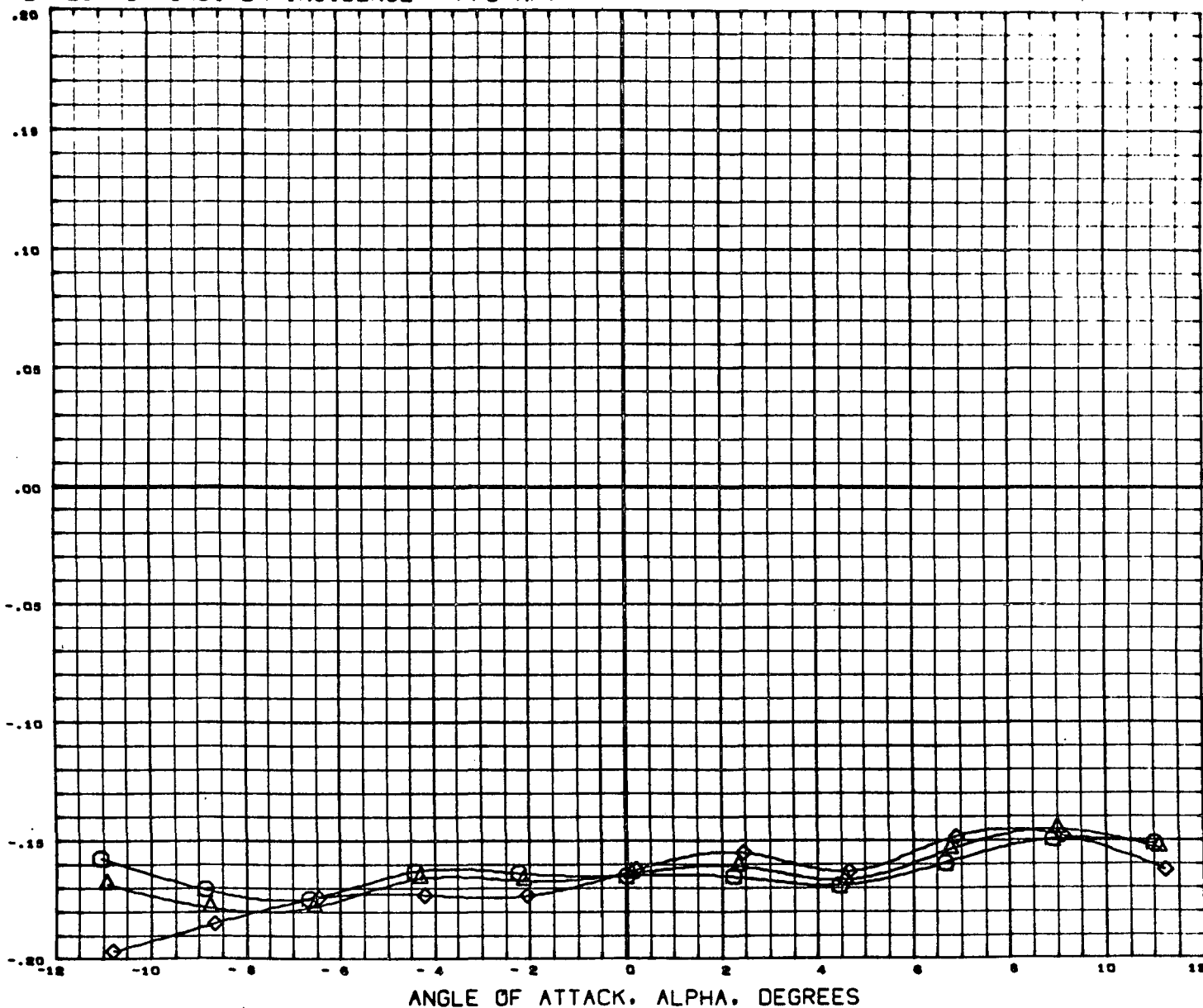
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13241A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560 30 IN
(13243A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0039 SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B AFT

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE

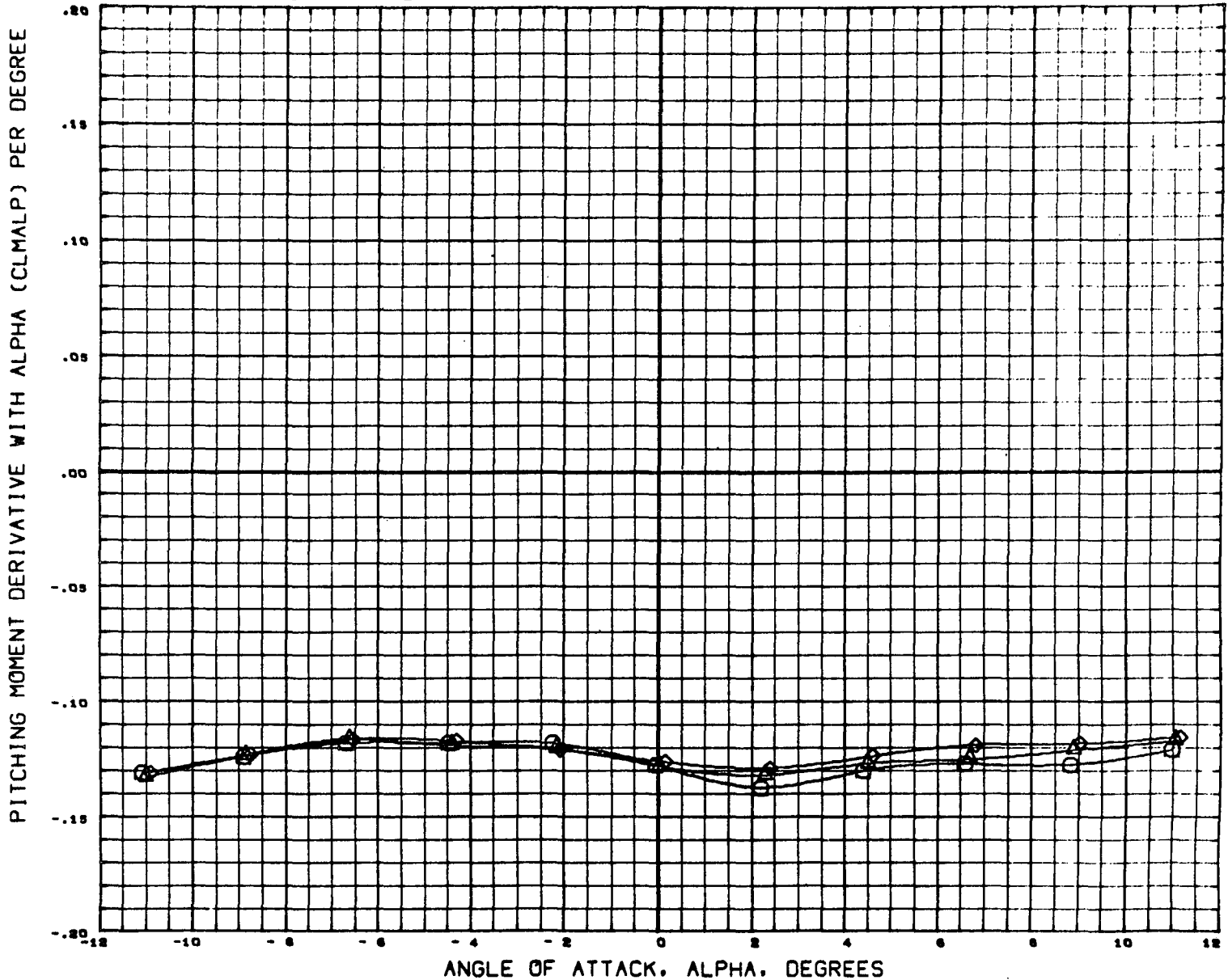


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13241A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560	SQ IN
(13243A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950	INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
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						YMRP	0.0000	
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						SCALE	0.0035	SCALE

MACH 1.10

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EFFECT OF ORBITER INCIDENCE - P/B AFT

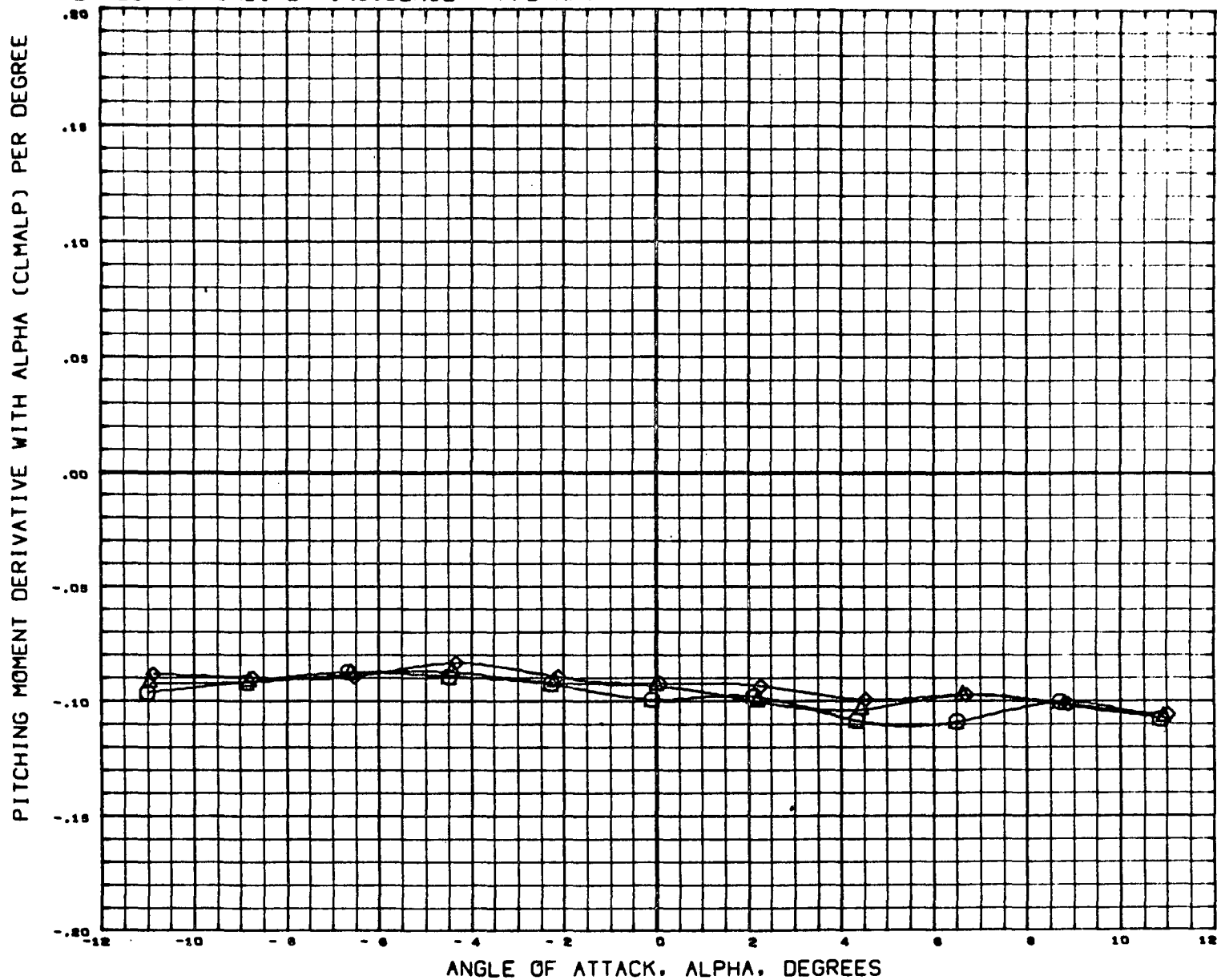


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560 SQ IN
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						SCALE	0.0035 SCALE

MACH 1.46

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EFFECT OF ORBITER INCIDENCE - P/B AFT

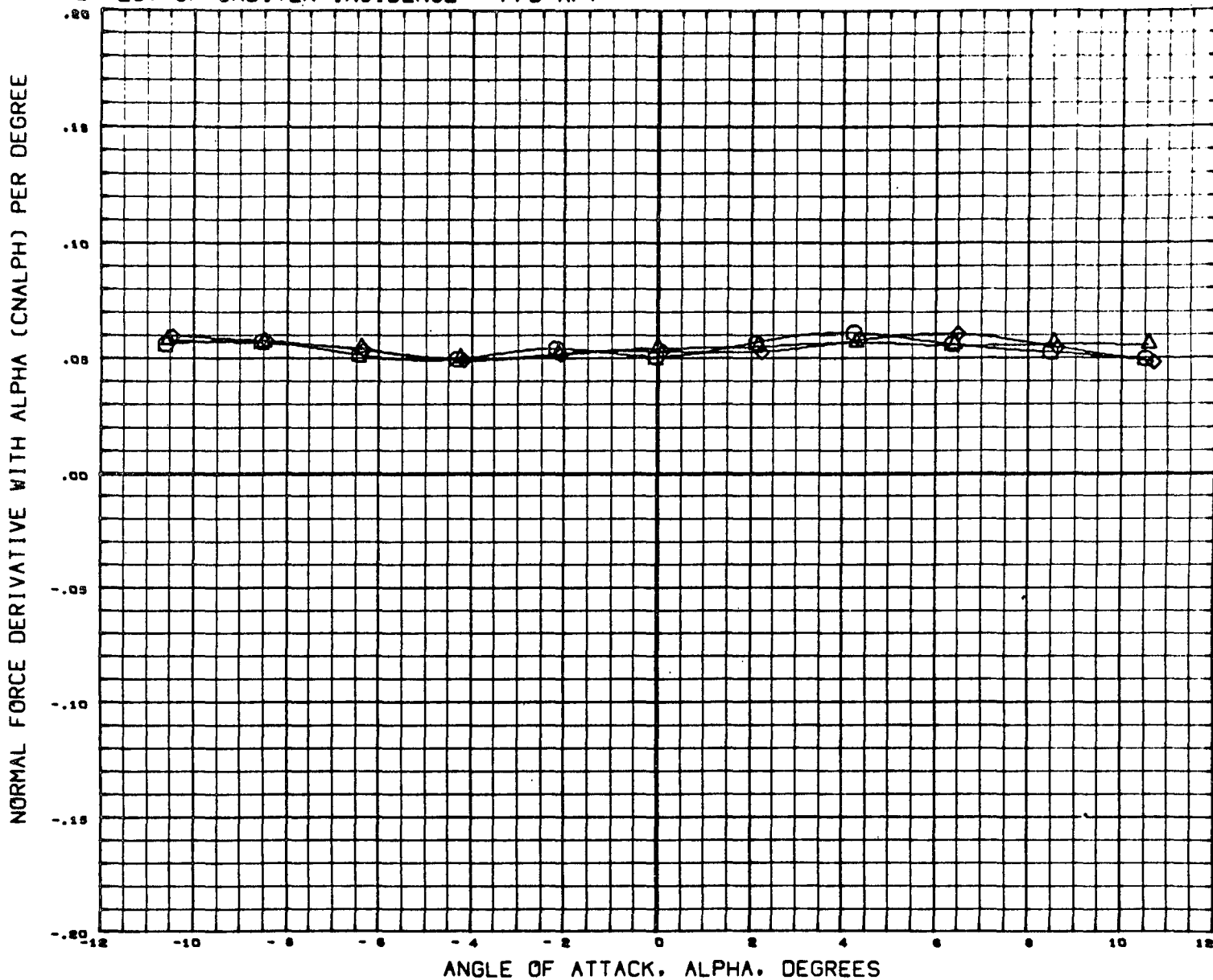


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(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
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						SCALE	0.0035 SCALE

MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B AFT



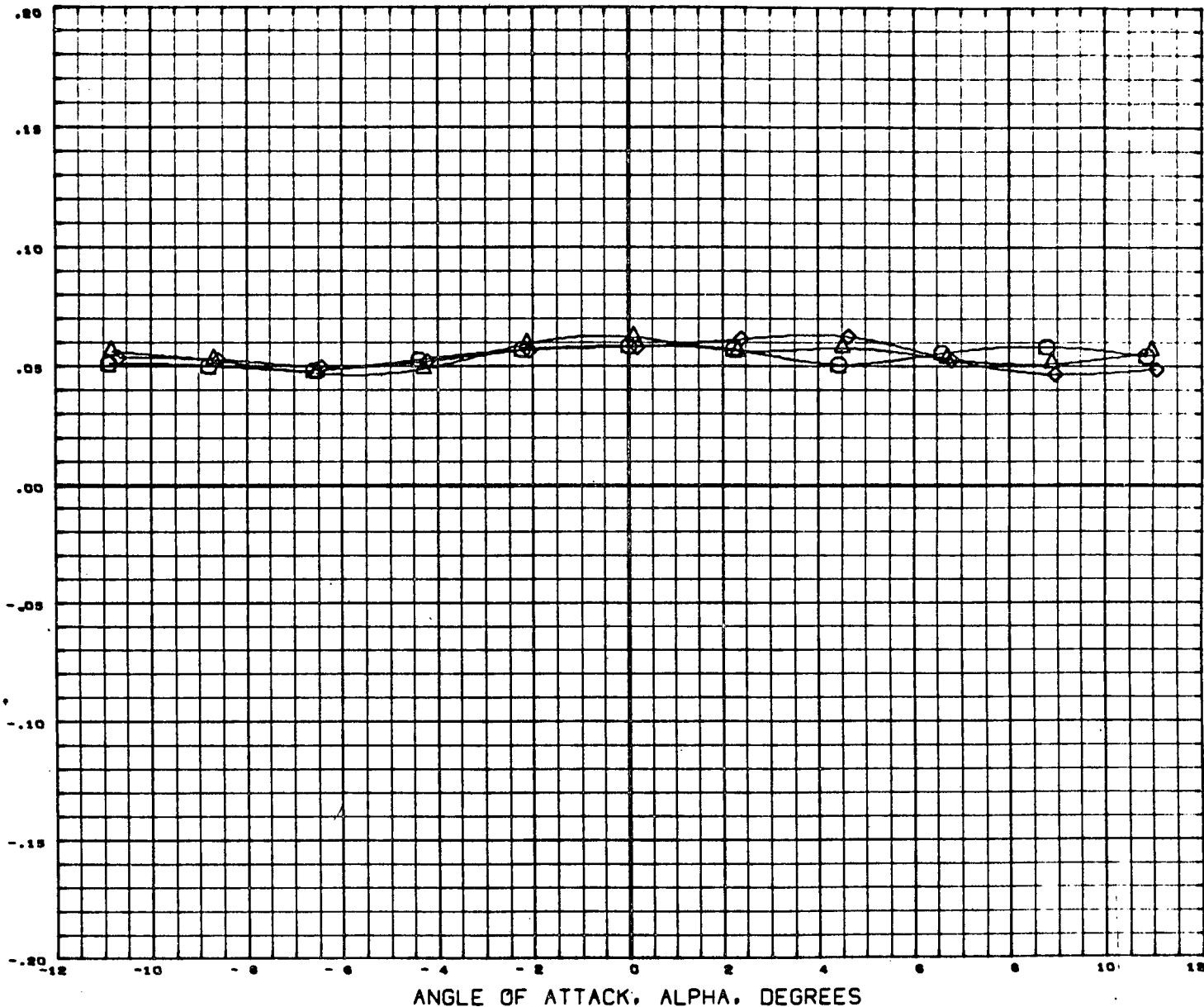
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(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560 SQ IN
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0930 INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
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MACH .60

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EFFECT OF ORBITER INCIDENCE - P/B AFT

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



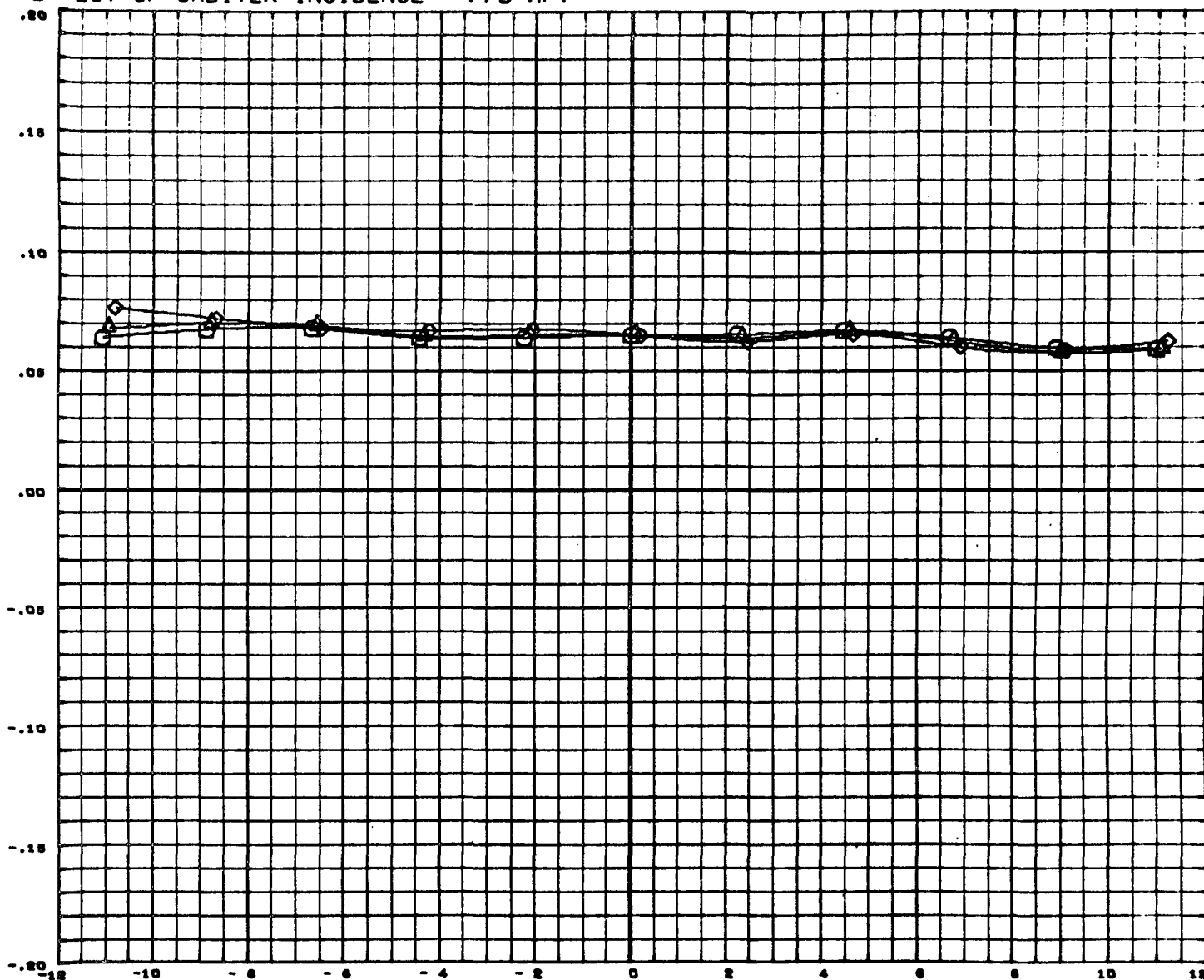
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(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560	30 IN
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0950	INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0039	SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - P/B AFT

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+83W17V17	0.000	3.000	0.000	0.000	SREF	15.6560	50 IN
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+83W17V17	2.000	3.000	0.000	0.000	LREF	3.0950	INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+83W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
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						ZMRP	0.0000	
						SCALE	0.0035	SCALE

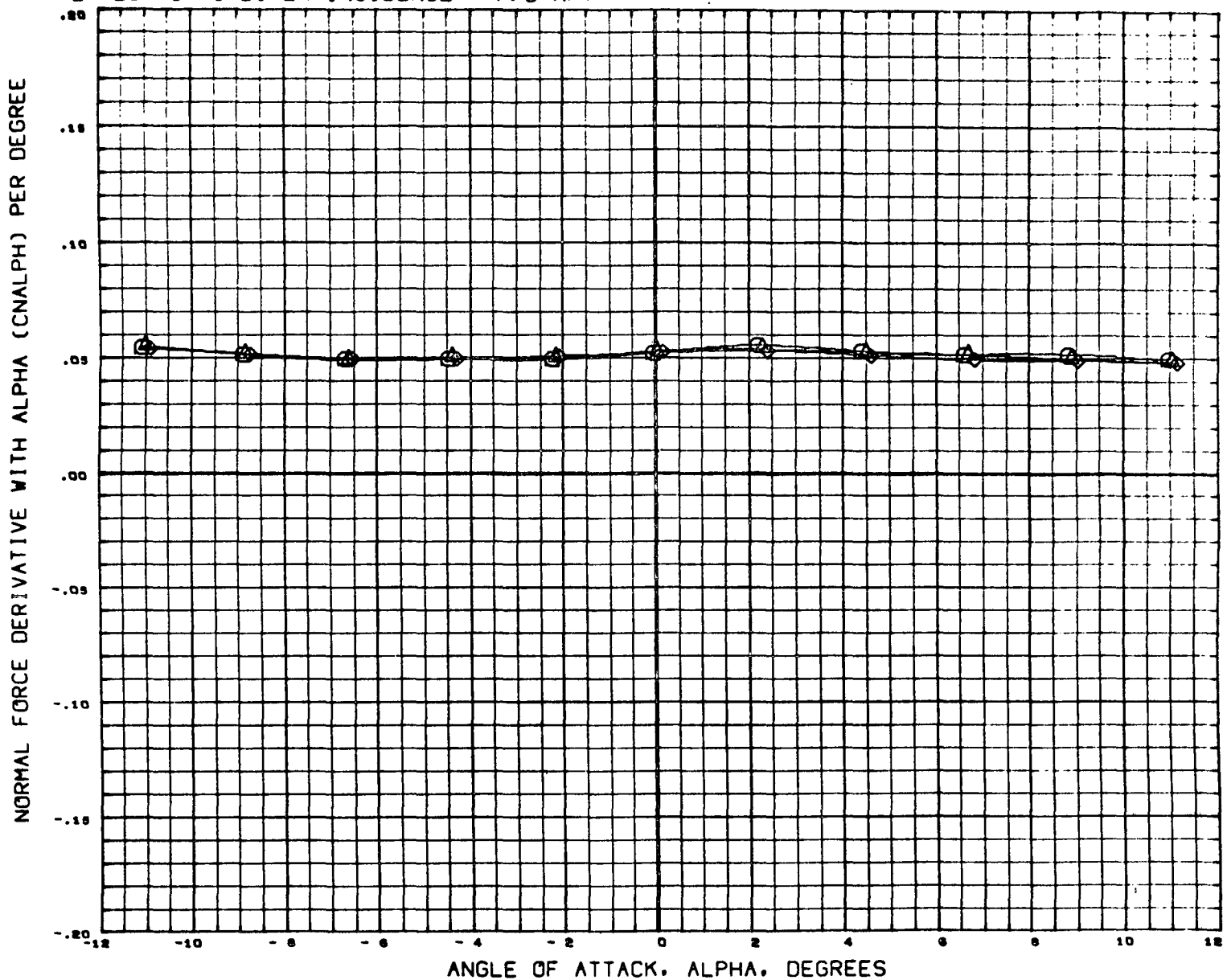
MACH

1.10

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EFFECT OF ORBITER INCIDENCE - P/B AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	0.000	3.000	0.000	0.000	SREF	15.6960 SQ IN
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(13244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

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EFFECT OF ORBITER INCIDENCE - P/B AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBIT INC	POSITH	BETA	ELVATR	REFERENCE INFORMATION		
(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	SREF	15.6560	30 IN
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	LREF	3.0930	INCHES
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						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

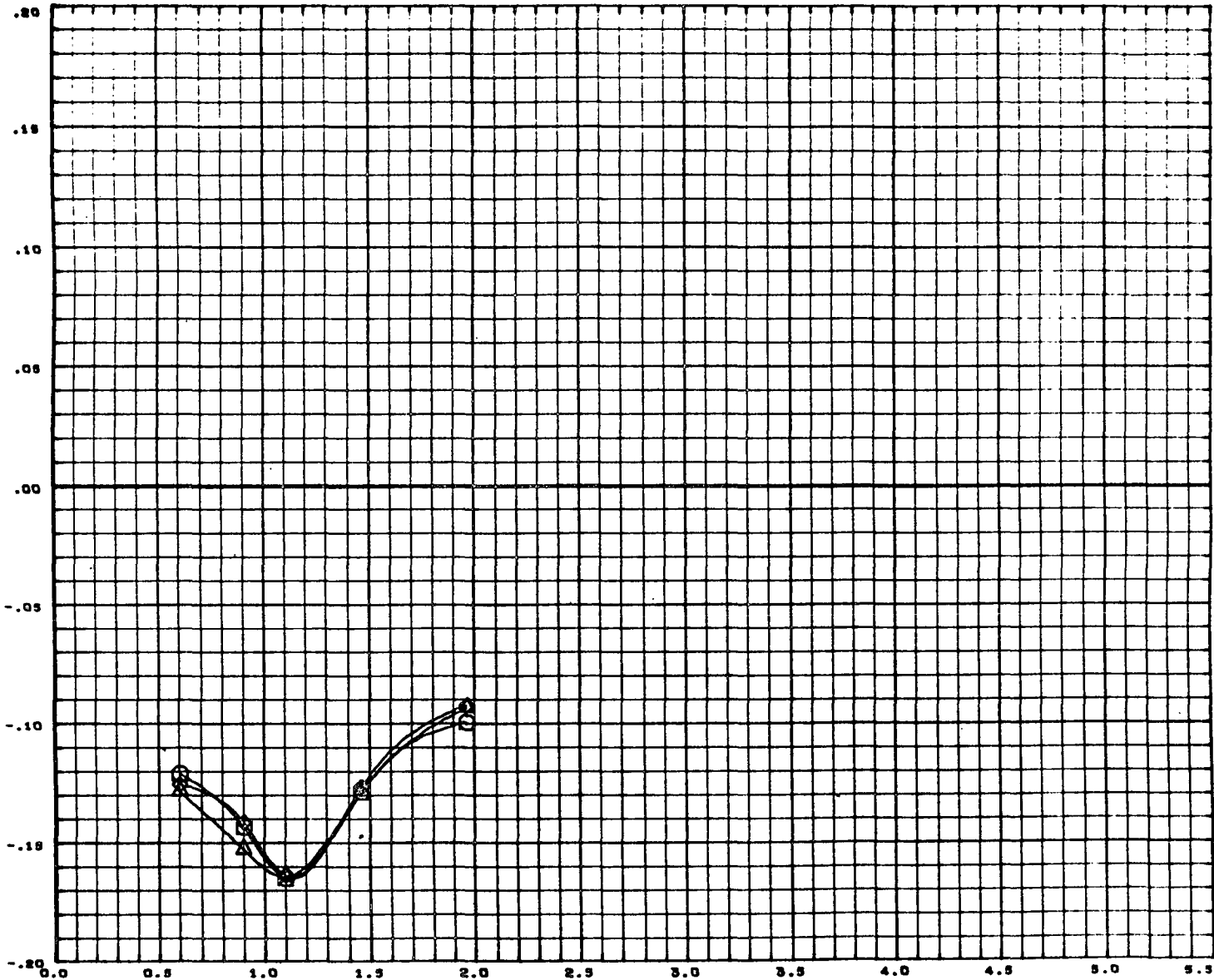
MACH 1.95

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EFFECT OF ORBITER INCIDENCE - P/B AFT

ALPHA = 0.

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17
(J3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(J3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

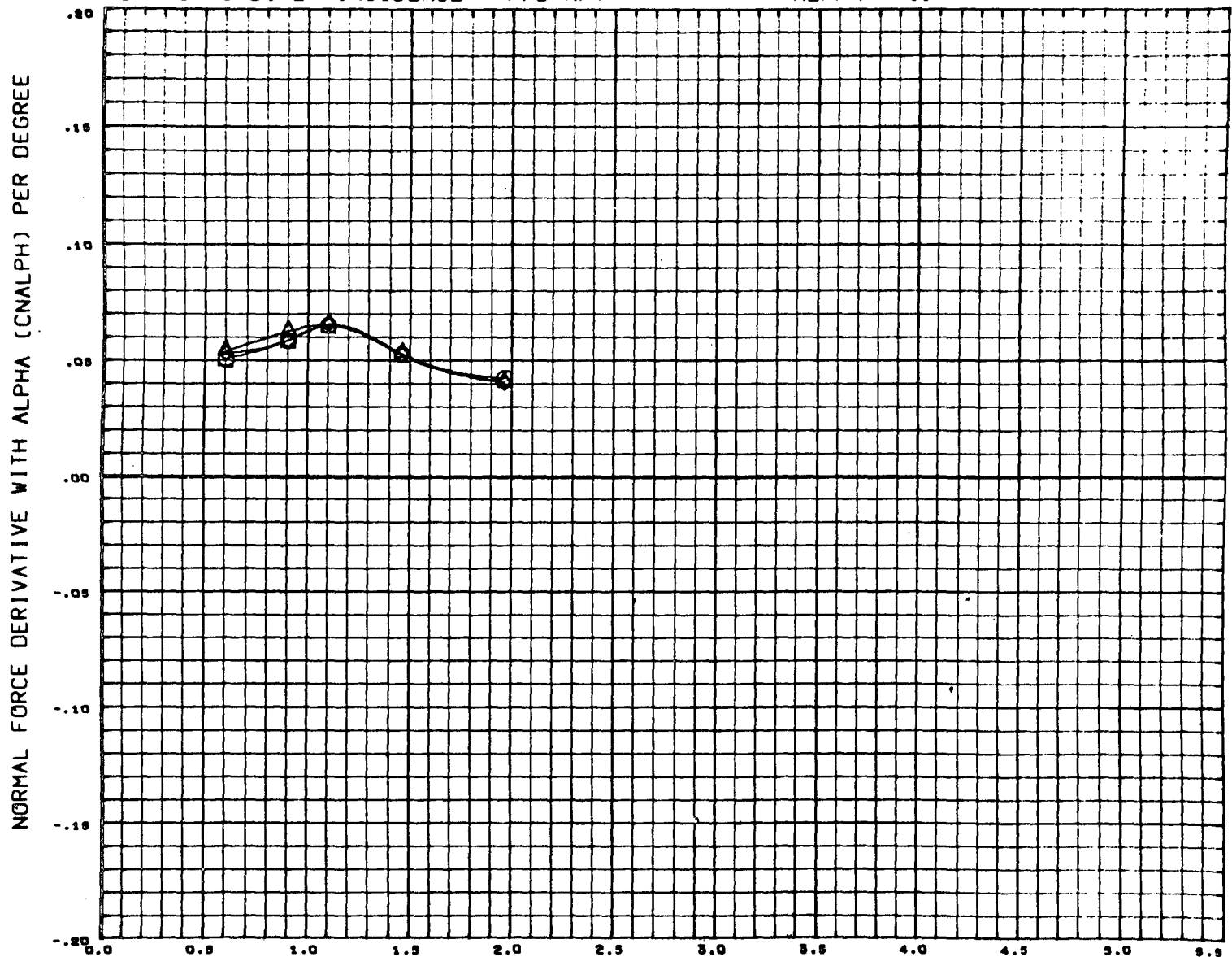
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ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
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ALPHA .00

EFFECT OF ORBITER INCIDENCE - P/B AFT

ALPHA = 0.



MACH NUMBER

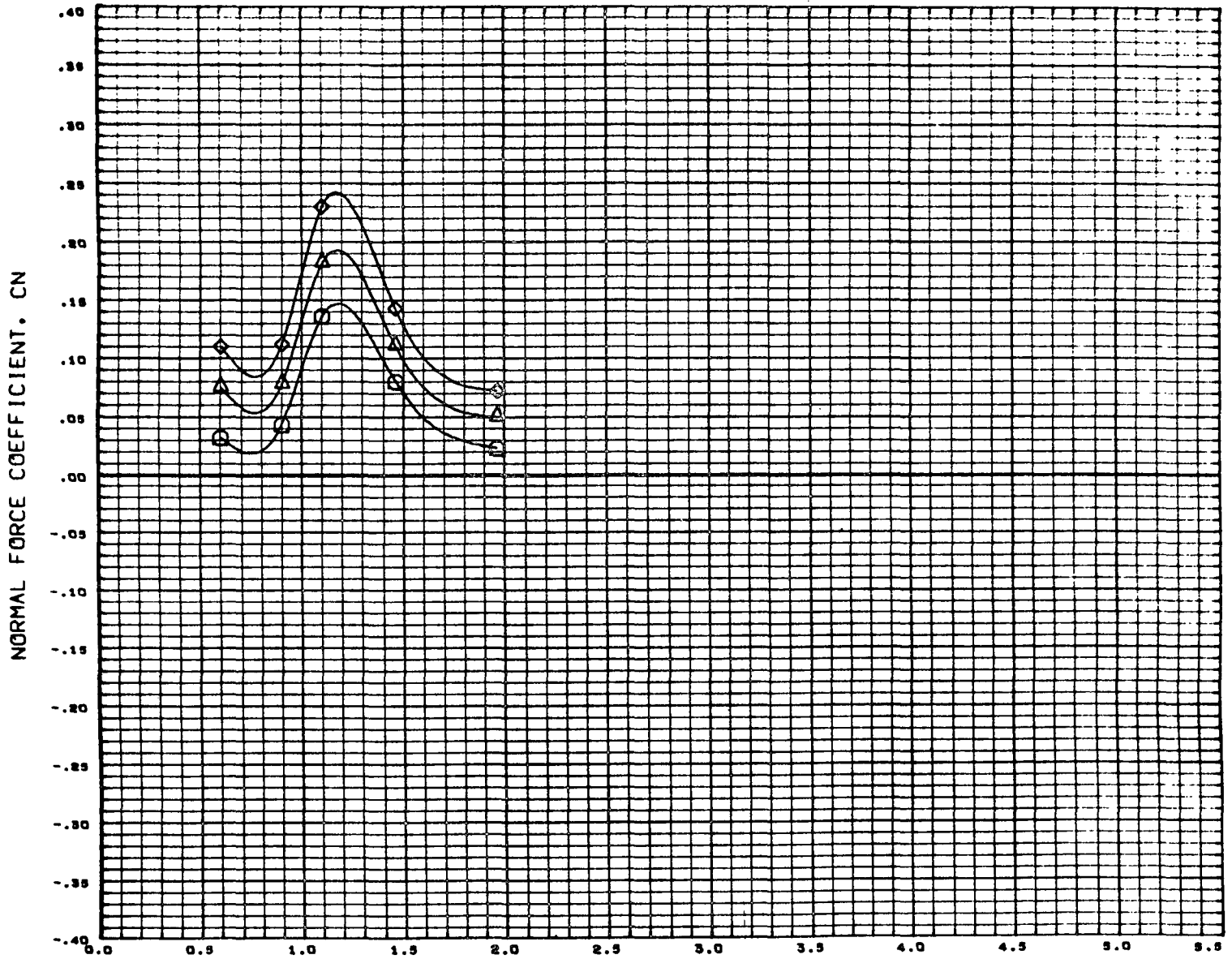
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(J3243A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B55W17V17	2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
(J3244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B55W17V17	4.000	3.000	0.000	0.000	BREF	6.0950 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER INCIDENCE - P/B AFT

ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K3241A) ○	MSFC490 NR/GD LAUNCH B2014BW14V8+B9W17V17
(K3243A) △	MSFC490 NR/GD LAUNCH B20C4BW14V8+B9W17V17
(K3244A) ◇	MSFC490 NR/GD LAUNCH B20C4BW14V8+B9W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	3.000	0.000	0.000	SREF 15.6560 50 IN
2.000	3.000	0.000	0.000	LREF 3.0950 INCHES
4.000	3.000	0.000	0.000	BREF 6.0990 INCHES
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				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

EFFECT OF ORBITER INCIDENCE - P/B AFT

ALPHA = 0.



MACH NUMBER

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17
(K3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(K3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	3.000	0.000	0.000	SREF	15.6560 80 IN
2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER INCIDENCE - P/B AFT

ALPHA = 0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



MACH NUMBER

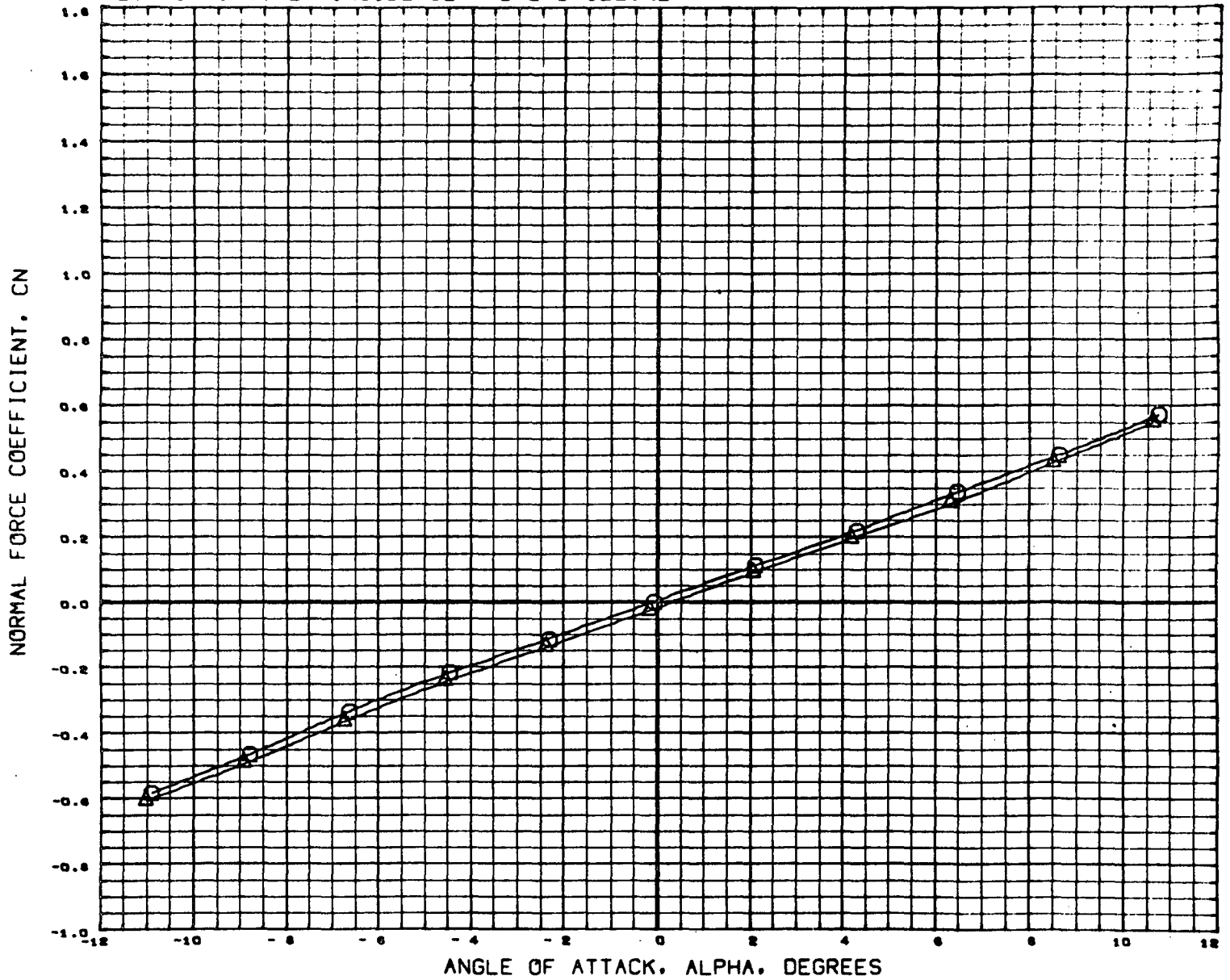
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(K3243A)	MSFC490 NR/GD LAUNCH B20C48W14V8+85W17V17
(K3244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+85W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	3.000	0.000	0.000	SREF	19.6560 SQ IN
2.000	3.000	0.000	0.000	LREF	3.0950 INCHES
4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



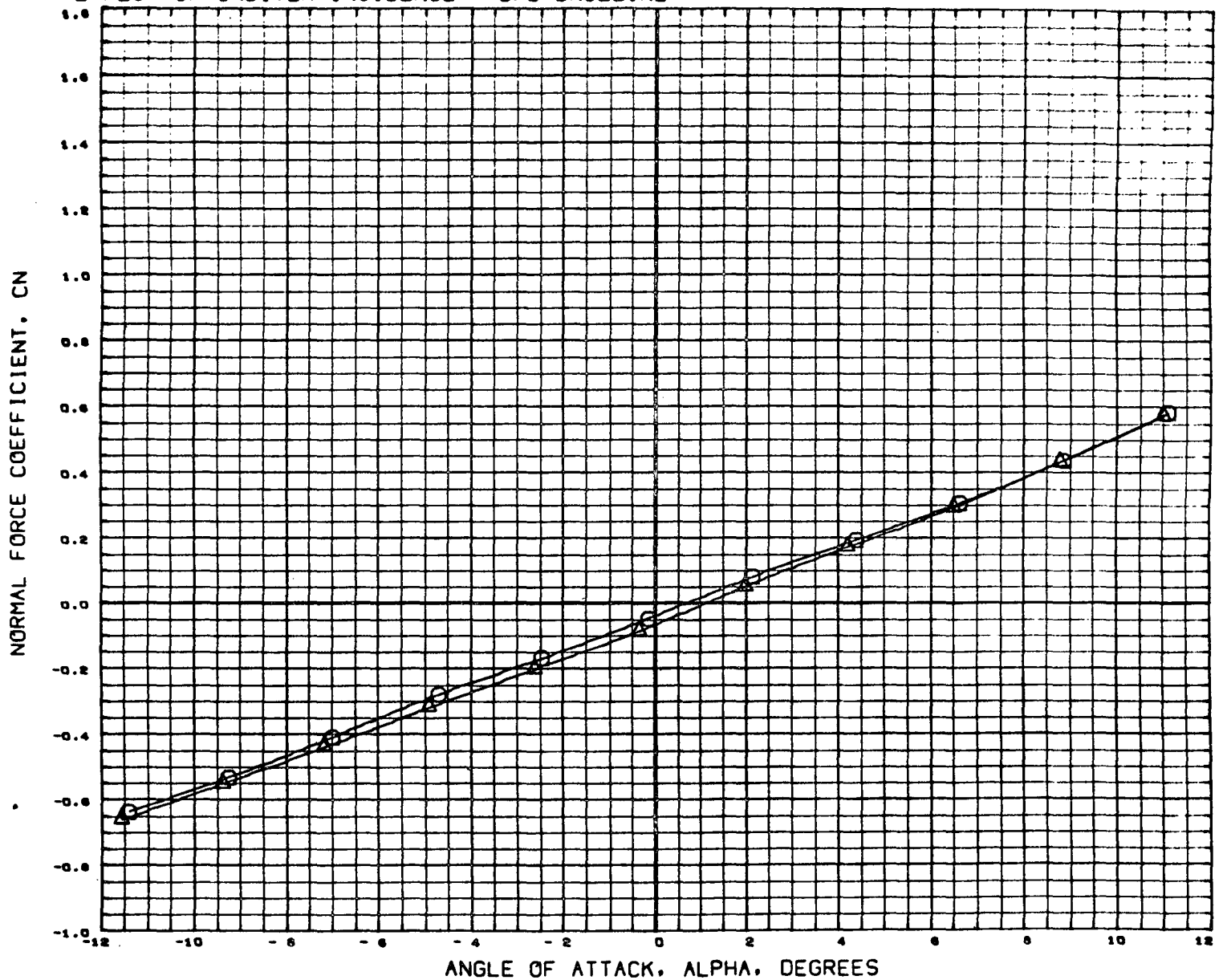
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(13252A)	M8FC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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(13252A)	M3FC490 NR/GD LAUNCH 820C48W14V8+85W17V17

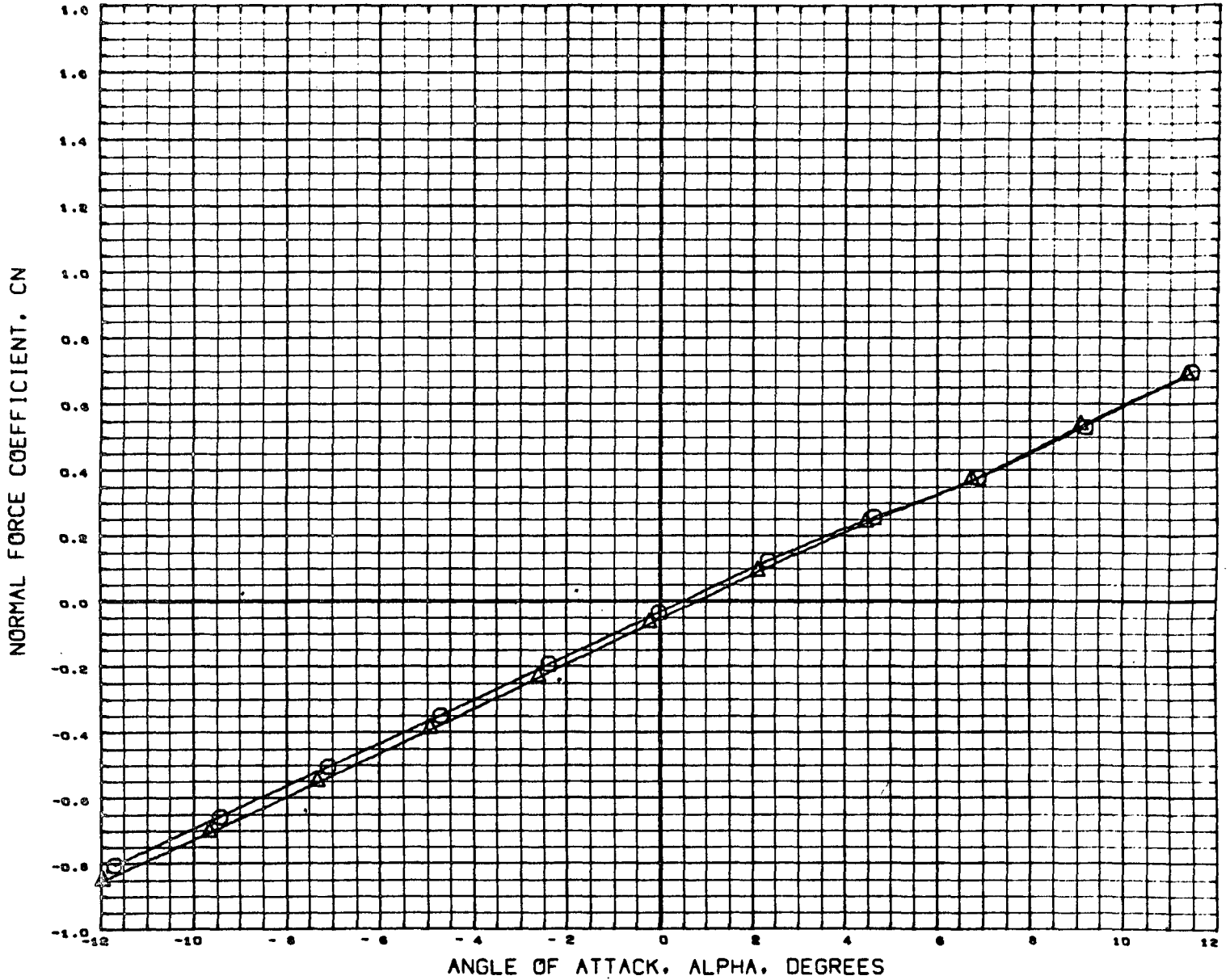
ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



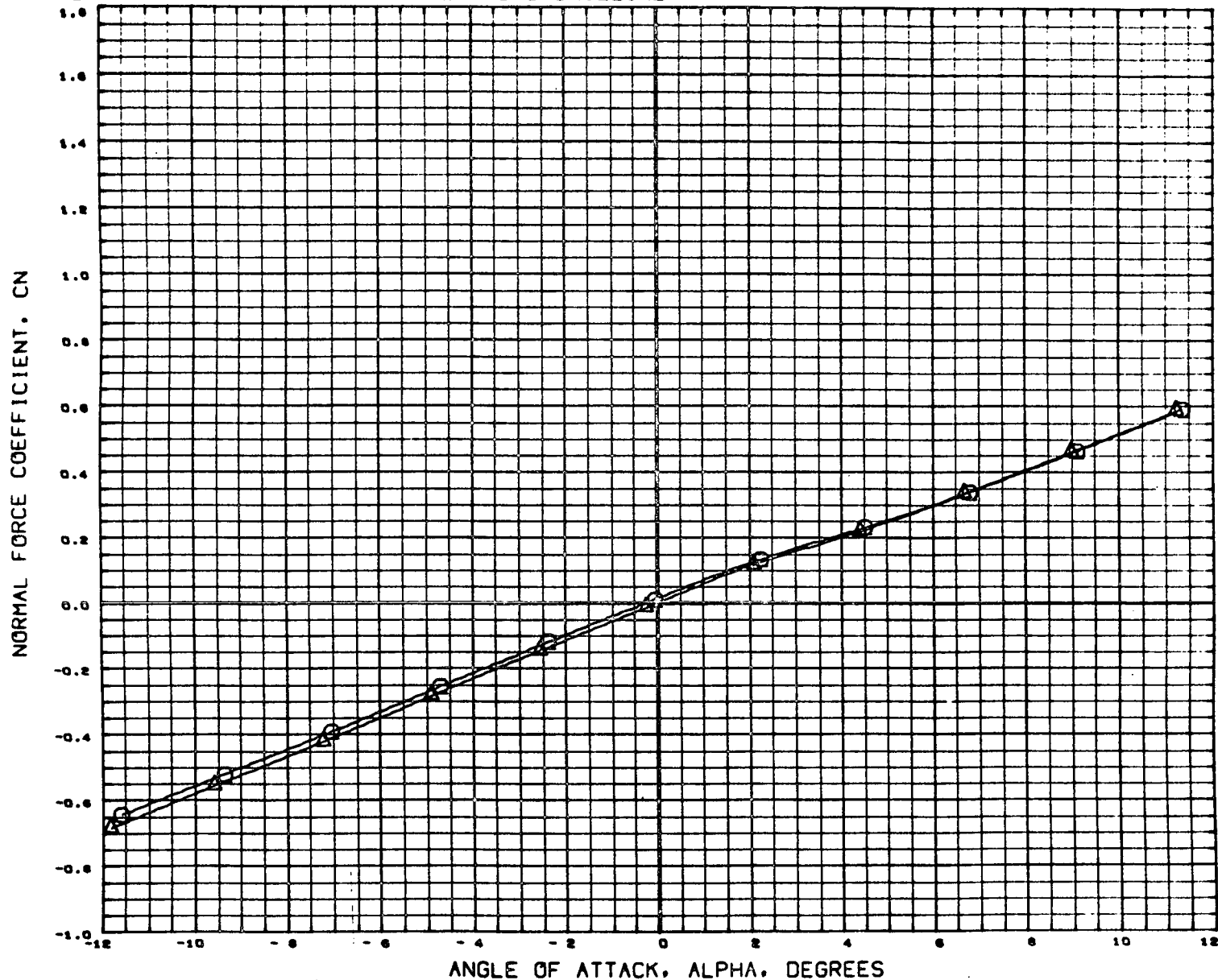
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ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.10

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



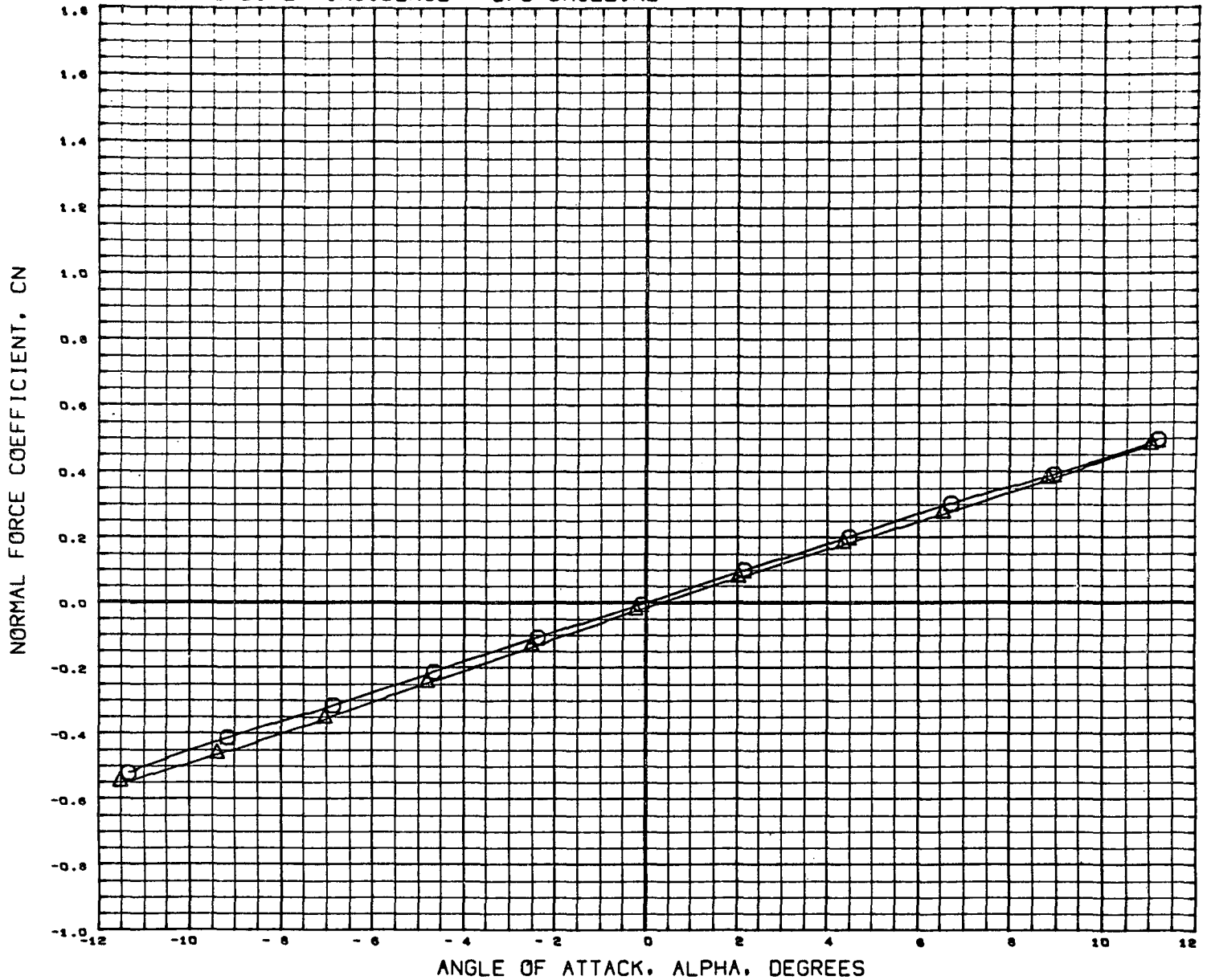
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(13252A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B55W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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2.000	4.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.46

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



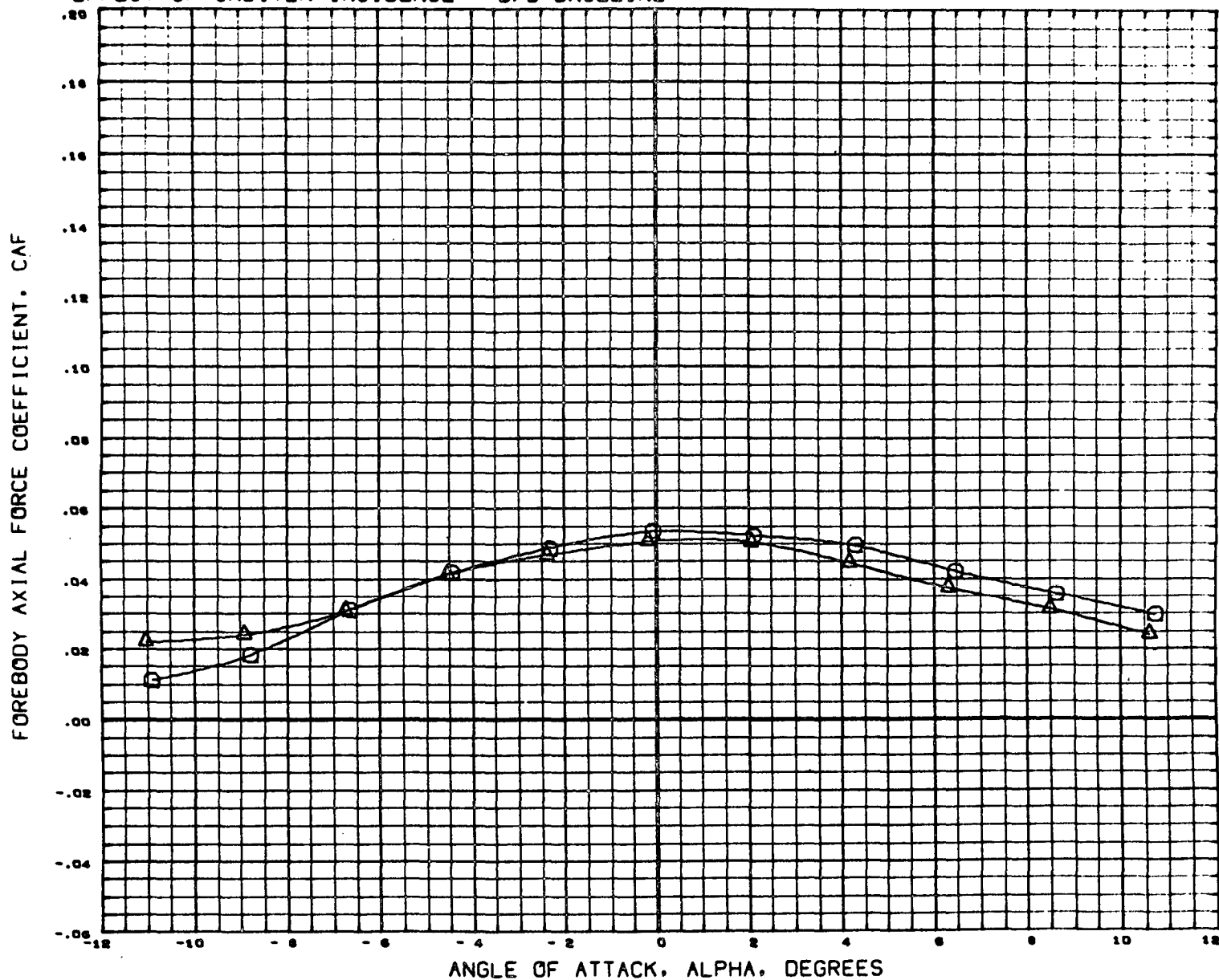
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(13252A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF 3.0990 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (13252A) MSFC490 NR/6D LAUNCH B20C4BW14V8+B5W17V17

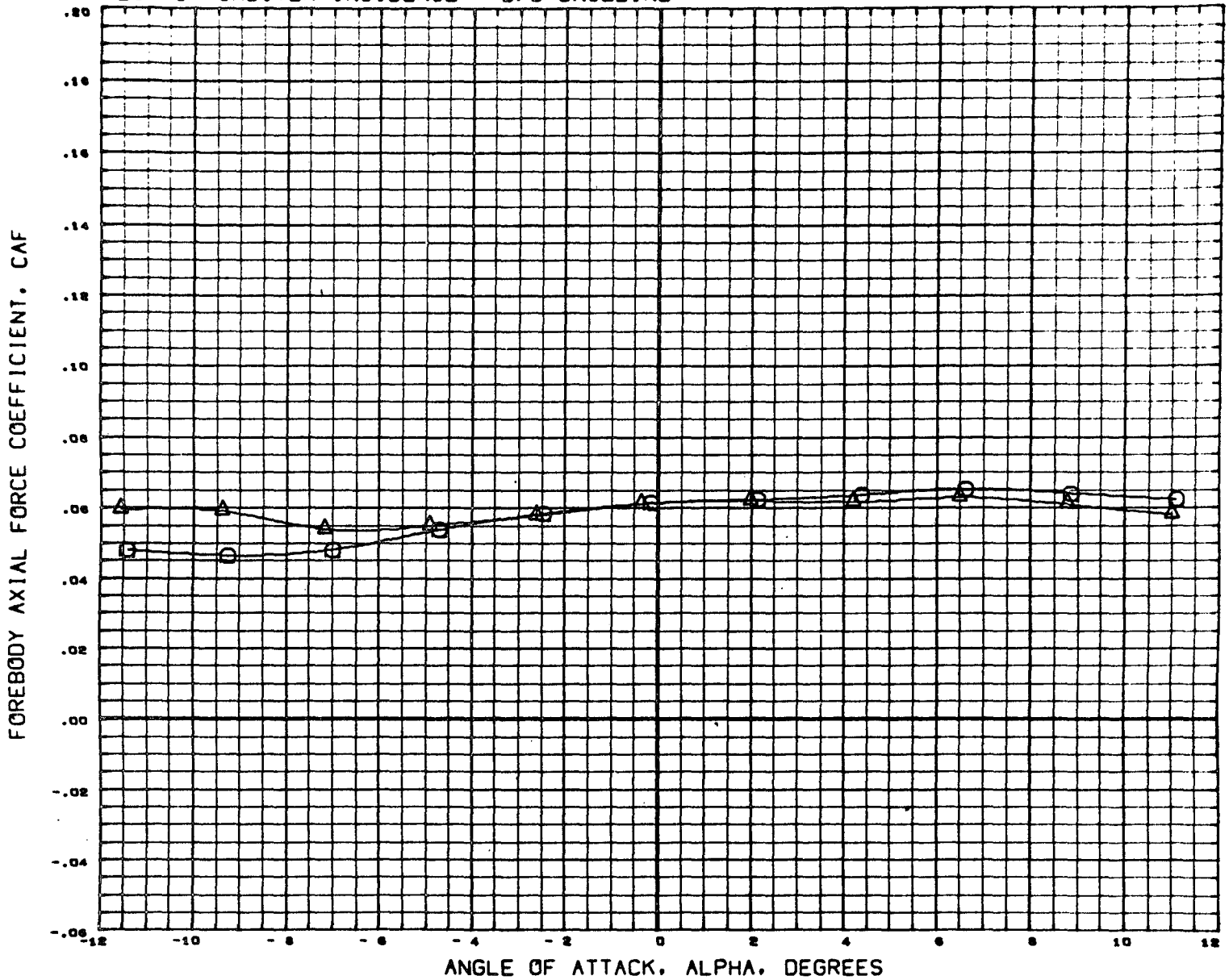
ORBIT INC POSITN BETA ELVATR
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 2.000 4.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0950 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



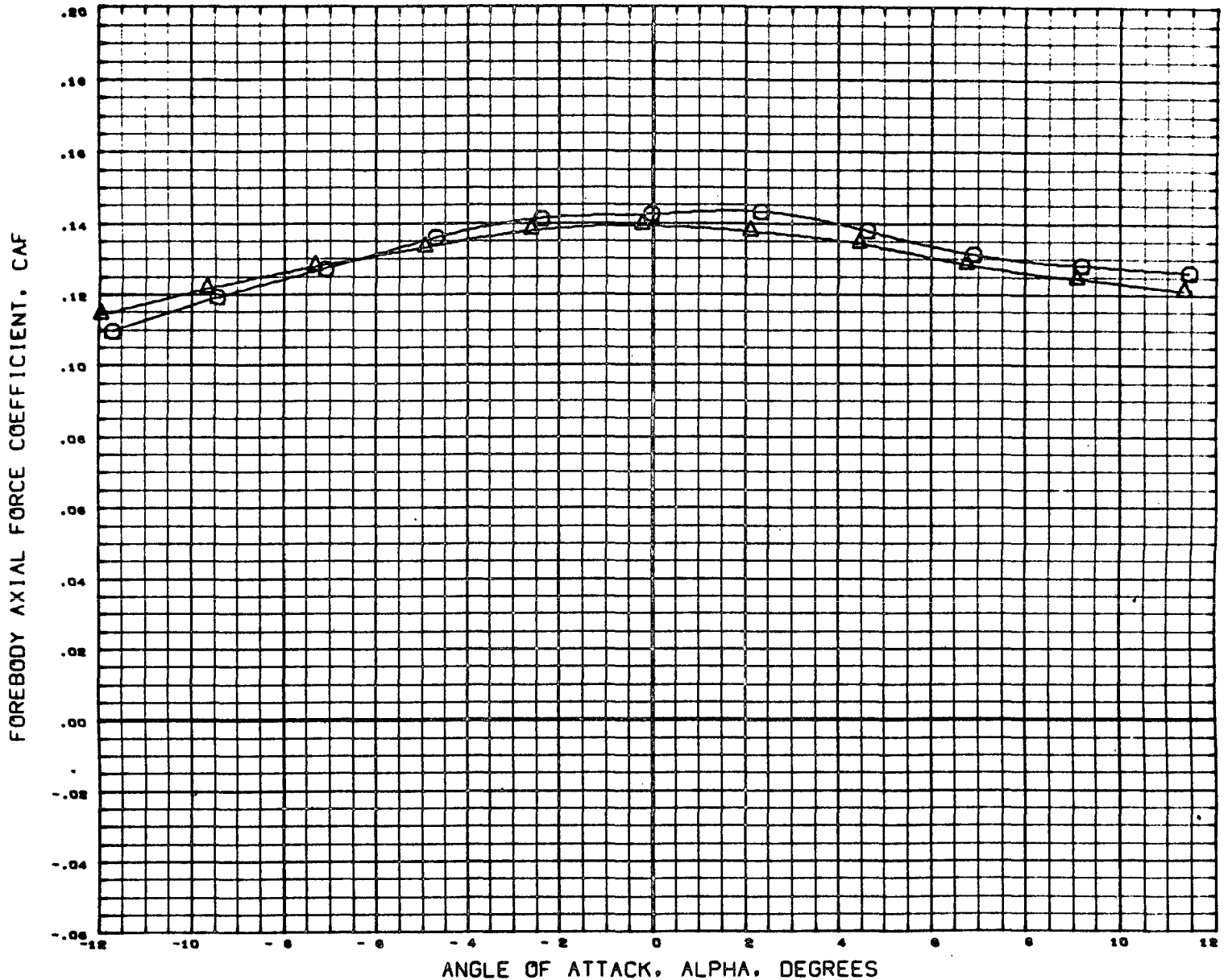
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(H3252A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF	3.0990 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13250A) ○	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(13252A) △	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

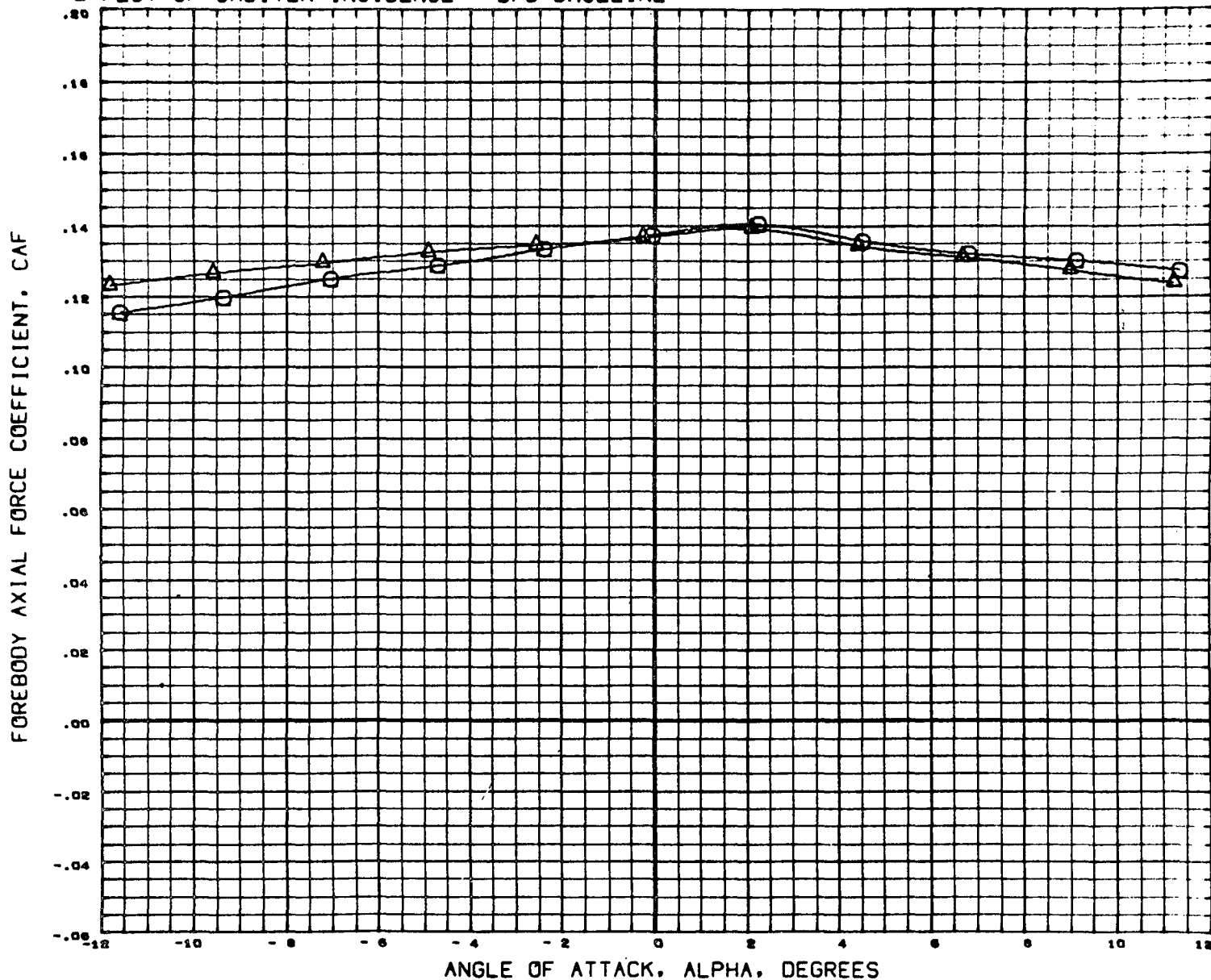
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
2.000	4.000	0.000	0.000

REFERENCE INFORMATION		
SREF	13.6360	80 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.10

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



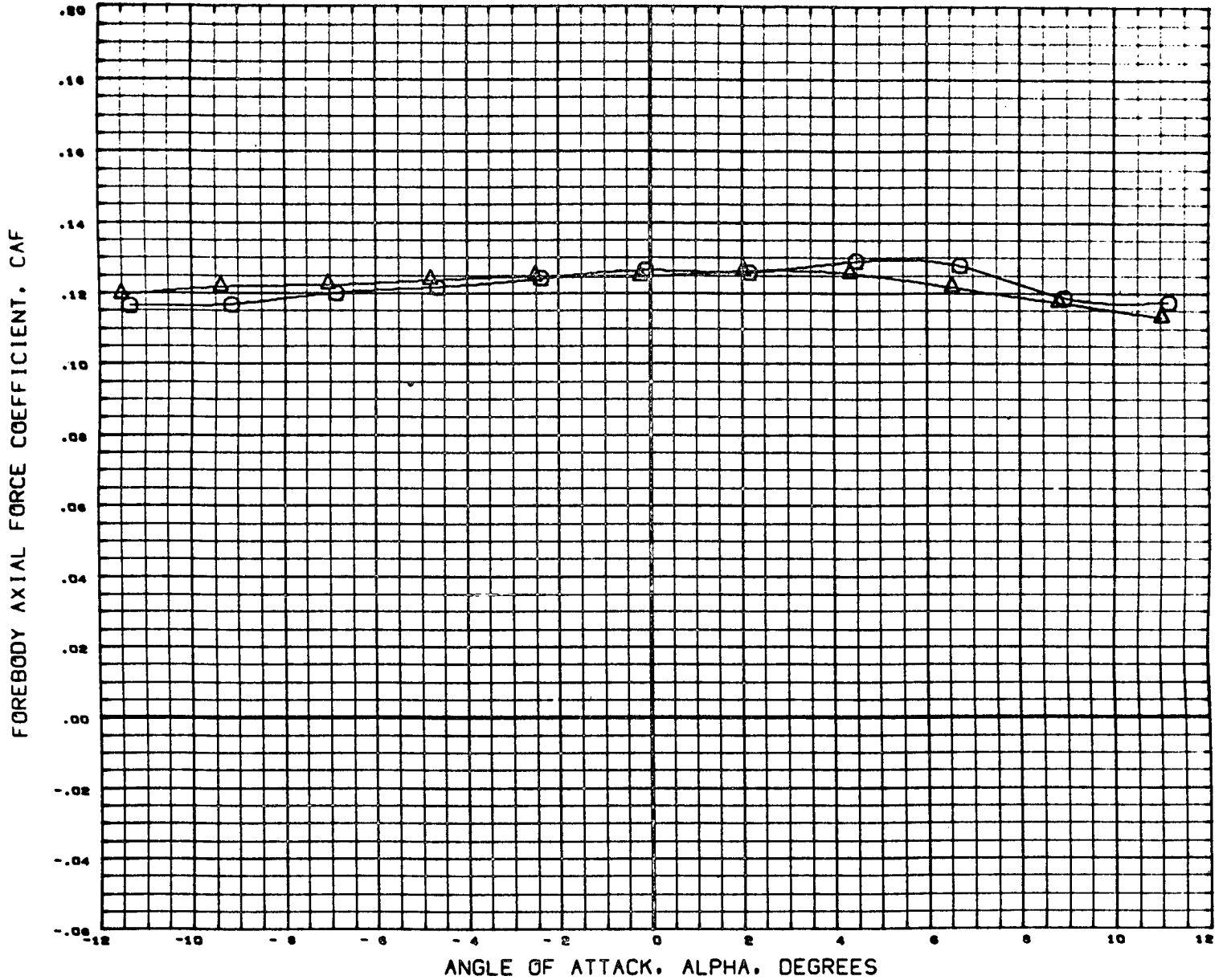
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(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(13252A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17



ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF	3.0930 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0033 SCALE

MACH 1.46

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13250A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17
(13252A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17

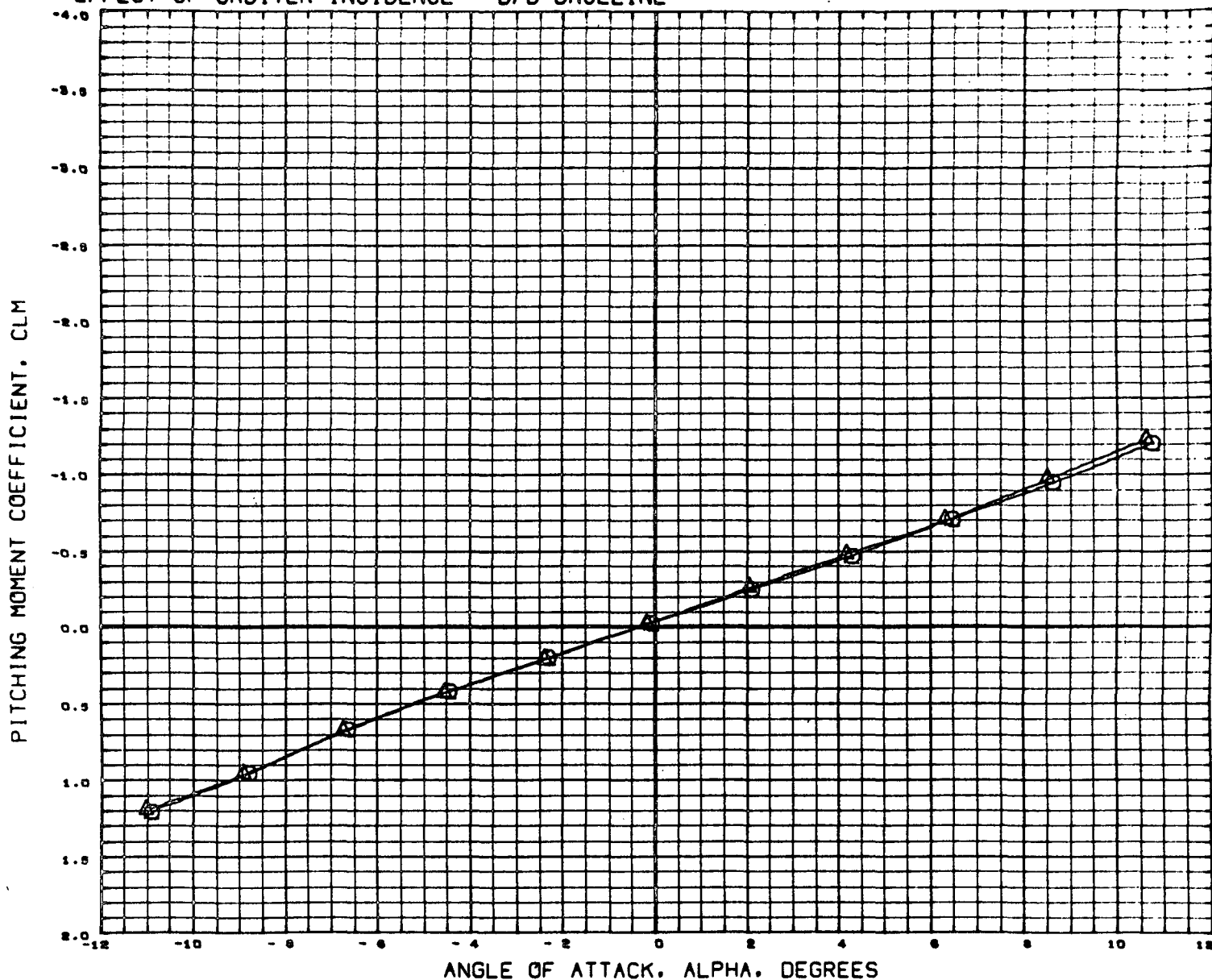
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
2.000	4.000	0.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.96

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



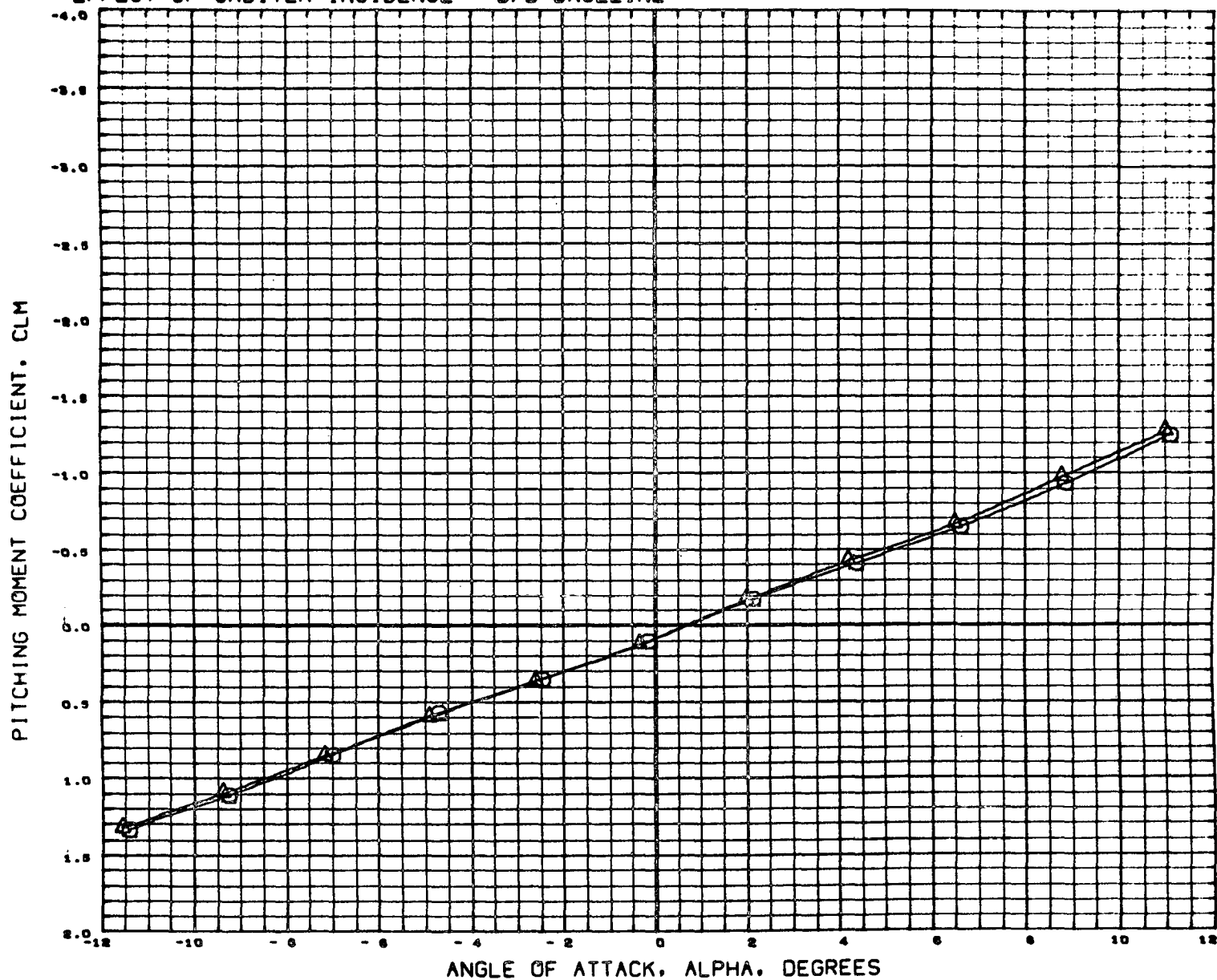
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(H3252A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE

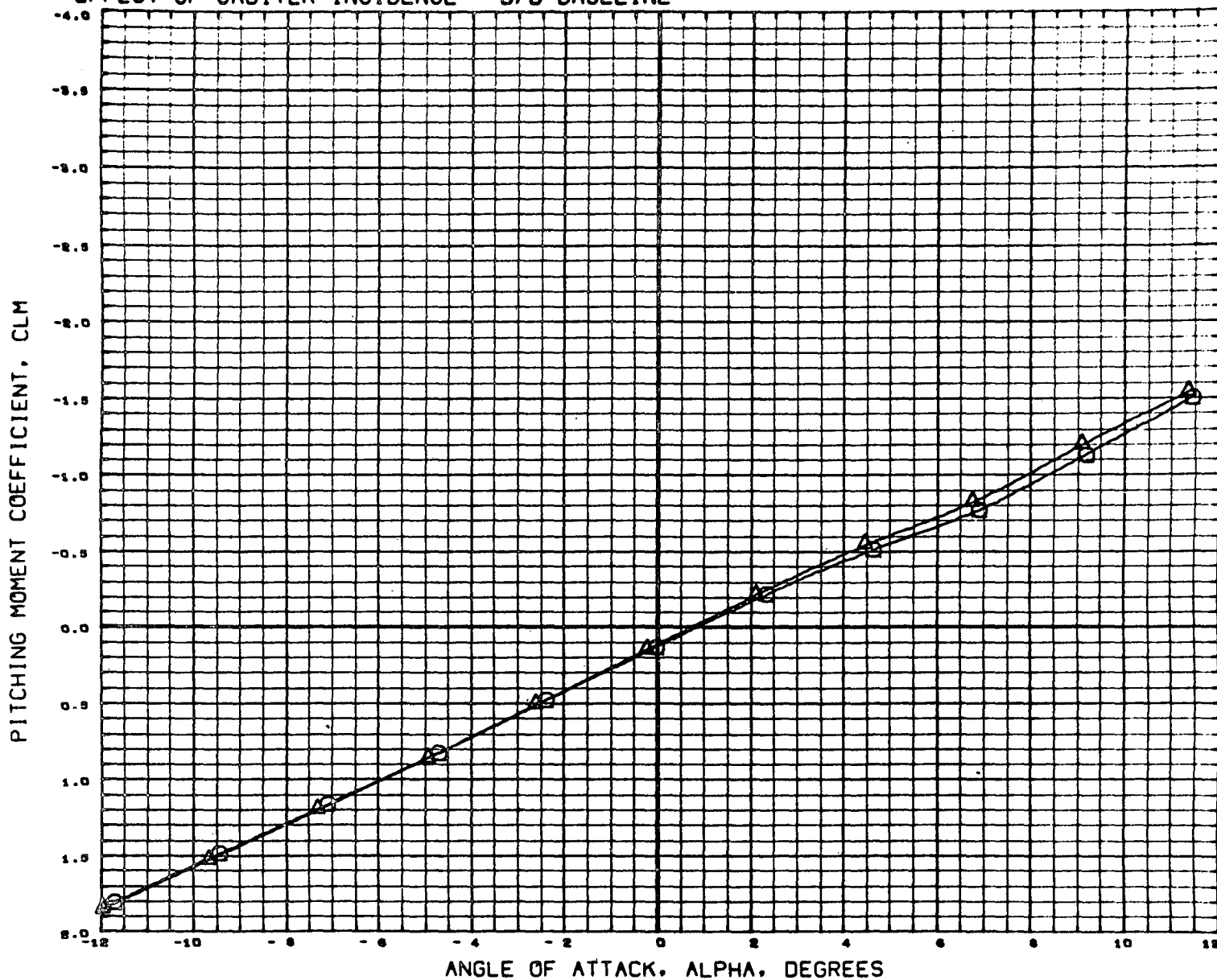


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	M5FC490 NR/GD LAUNCH 820C4BW14V6+85W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 30 IN
(13252A)	M5FC490 NR/GD LAUNCH 820C4BW14V6+85W17V17	2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13250A) MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17
 (13252A) MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17

ORBIT	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
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				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0055 SCALE

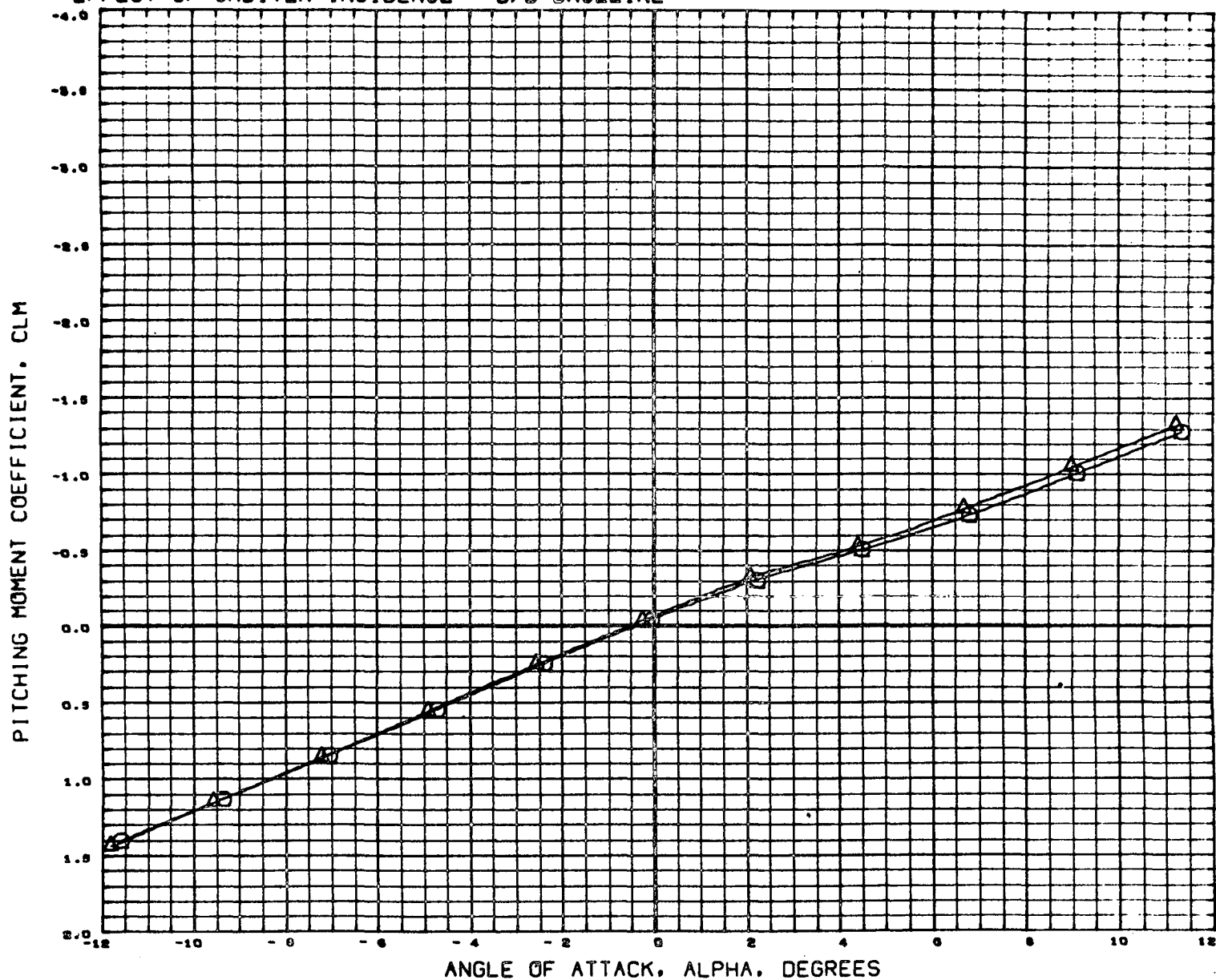
MACH

1.10

PAGE

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(13290A) MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17
 (13292A) MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17

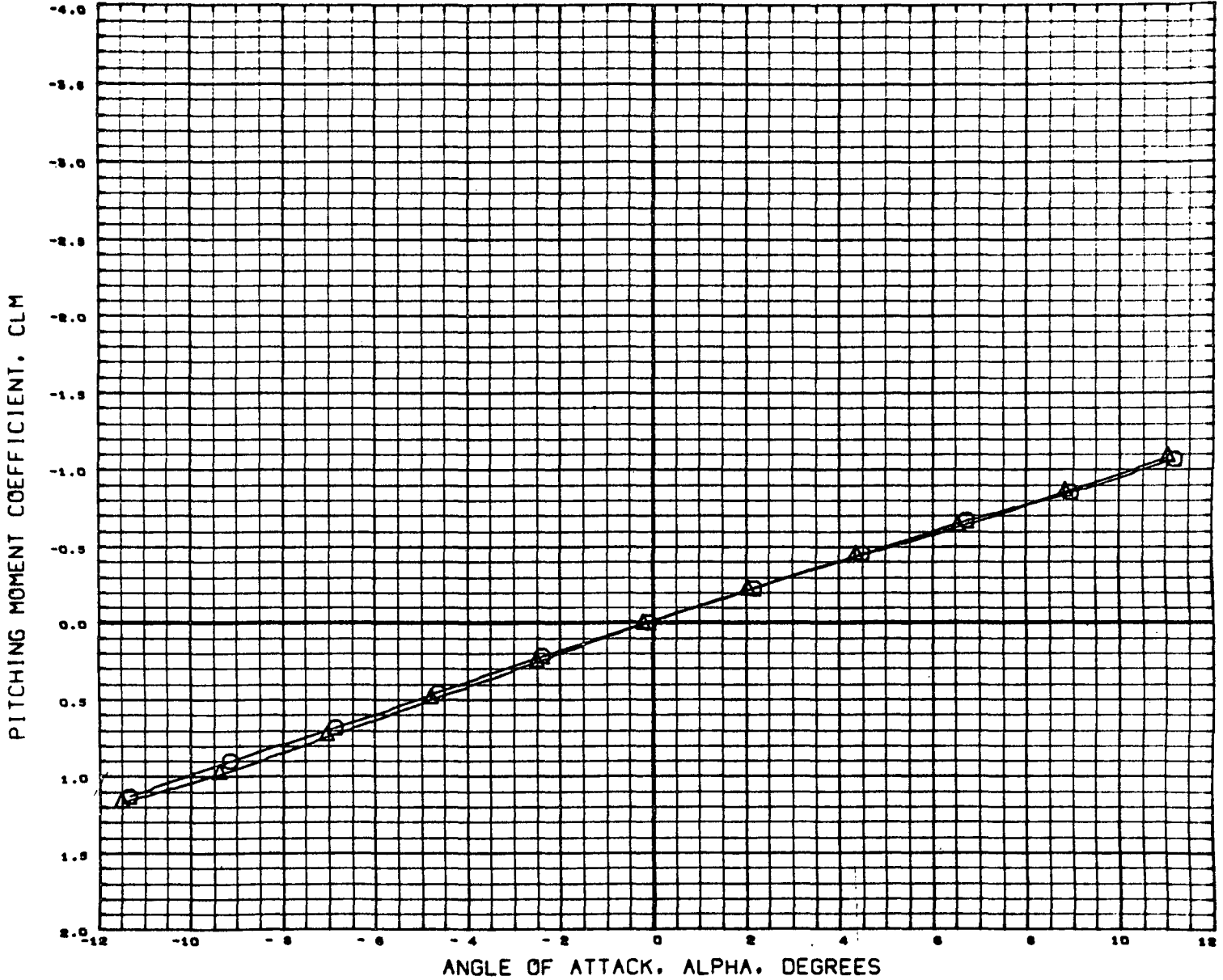
ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	0.000

REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 1.46

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 50 IN
(13252A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE

CENTER OF PRESSURE REFERENCED TO BODY LENGTH • XCP/L



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17
(13252A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17

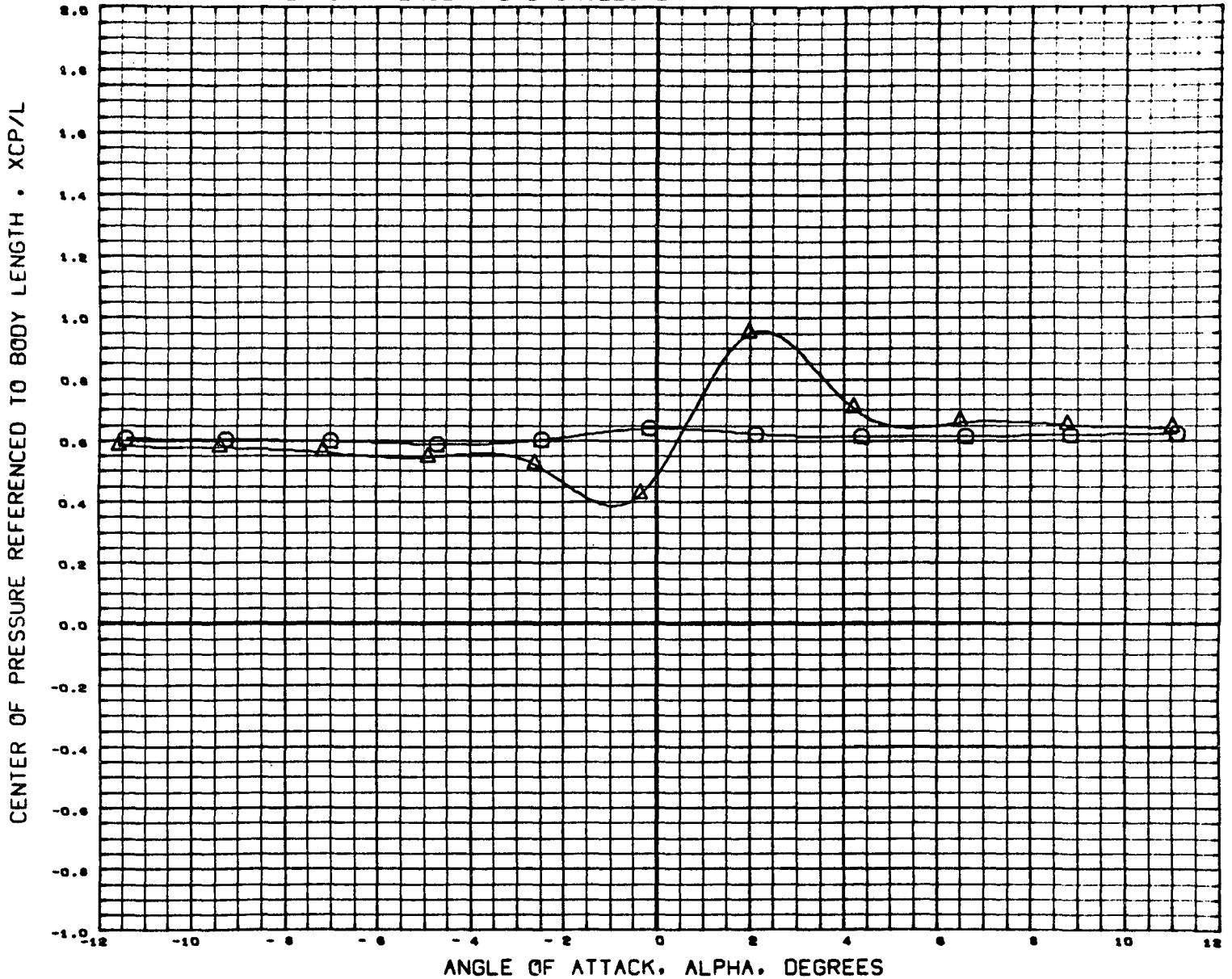
ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	0.000

REFERENCE INFORMATION	
SREF	15.6560 50 IN
LREF	3.0950 INCHES
BREF	6.0950 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17
(13252A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17

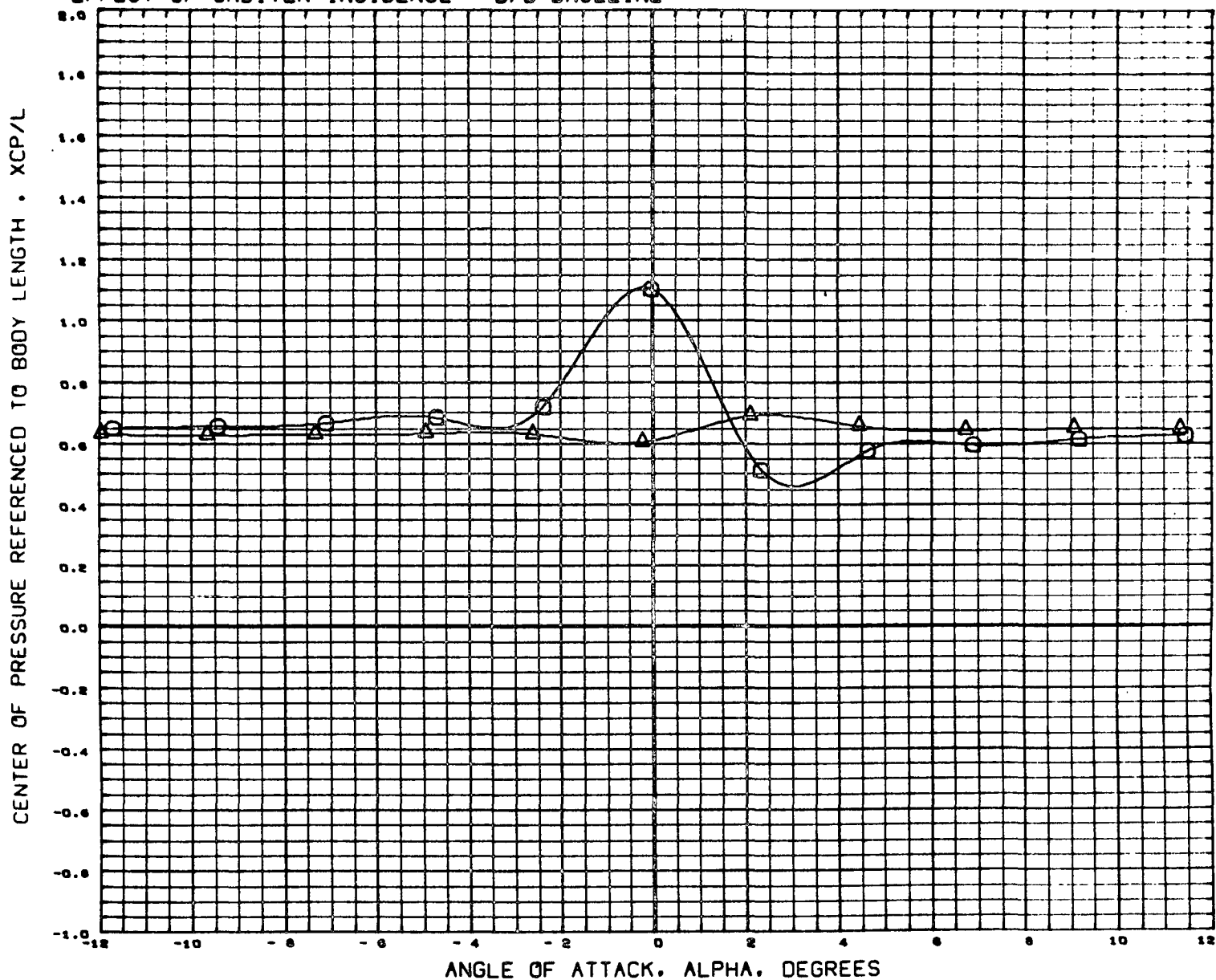
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
2.000	4.000	0.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	HSFC490 NR/GD LAUNCH B20C4BW14V8+B0W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(13252A)	HSFC490 NR/GD LAUNCH B20C4BW14V8+B0W17V17	2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

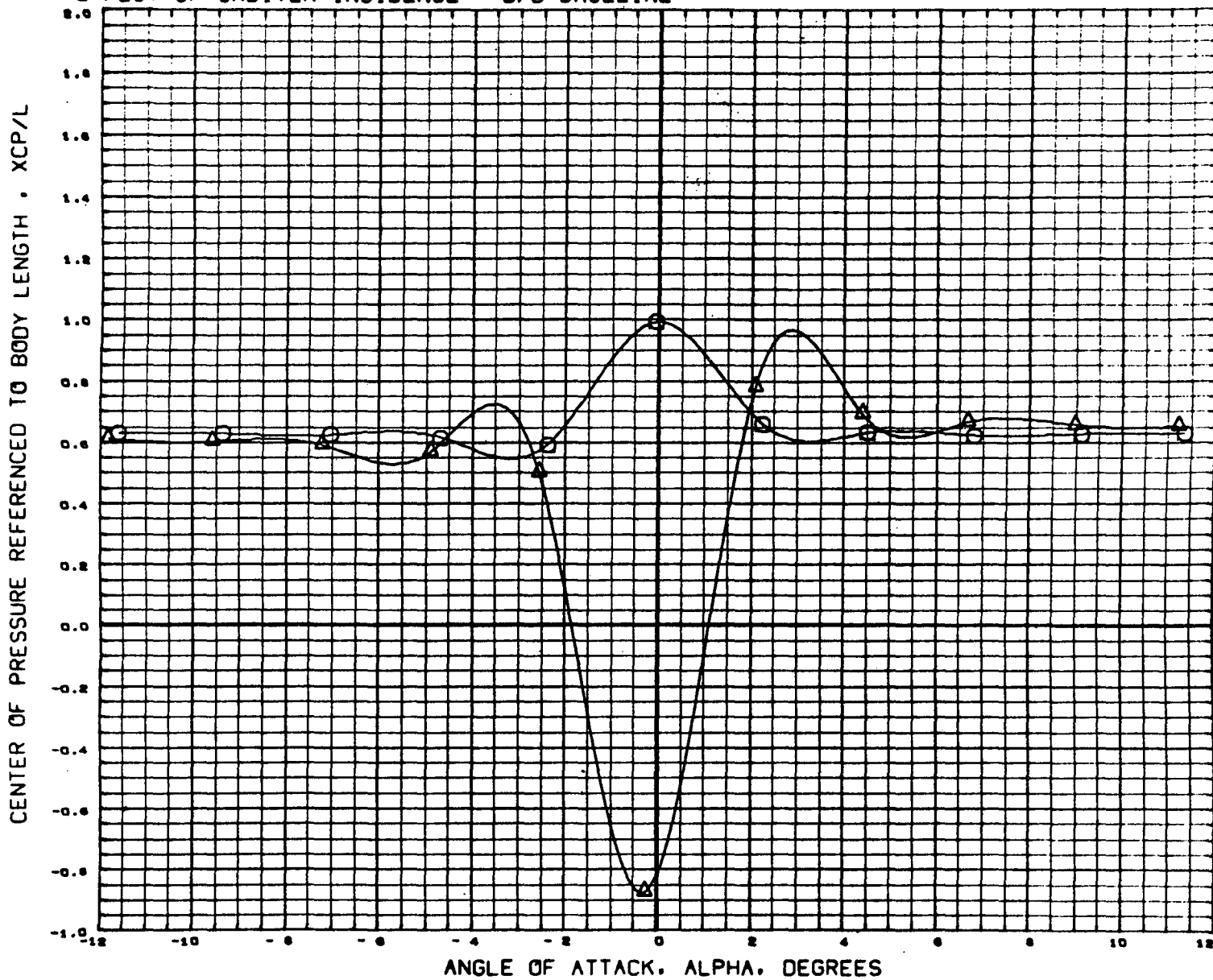
MACH

1.10

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



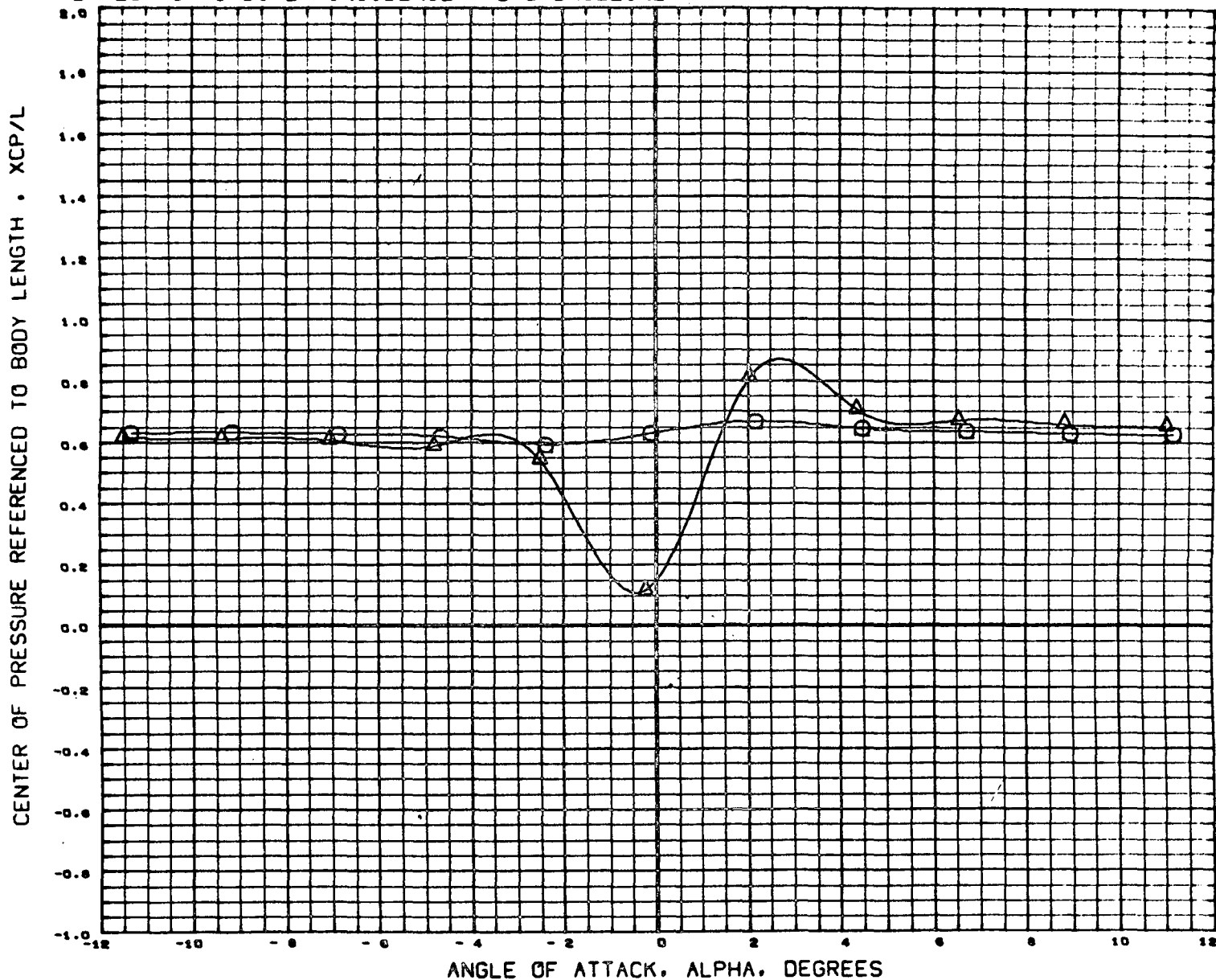
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13290A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17
(13292A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17



ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.46

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



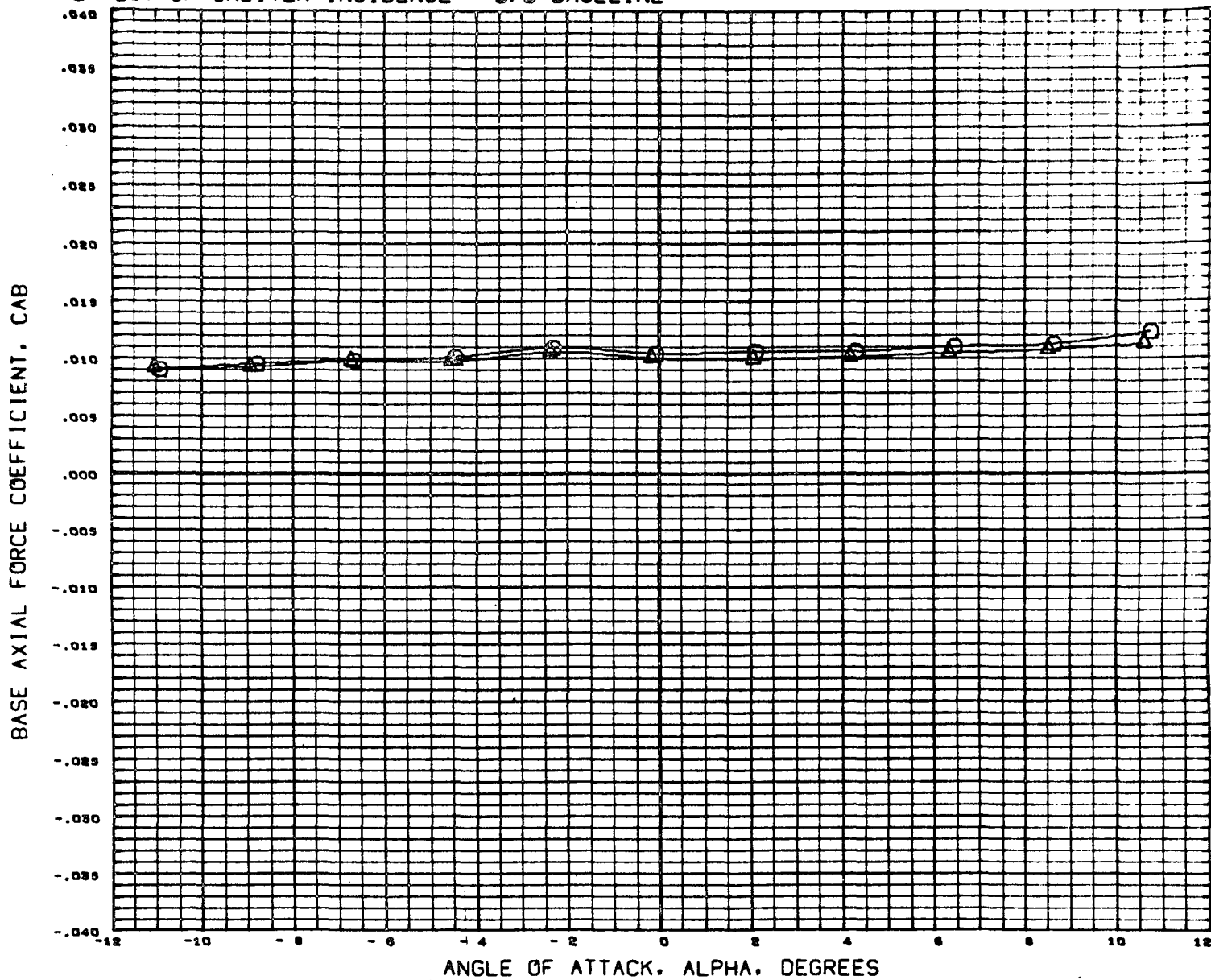
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(13290A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17
(13292A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



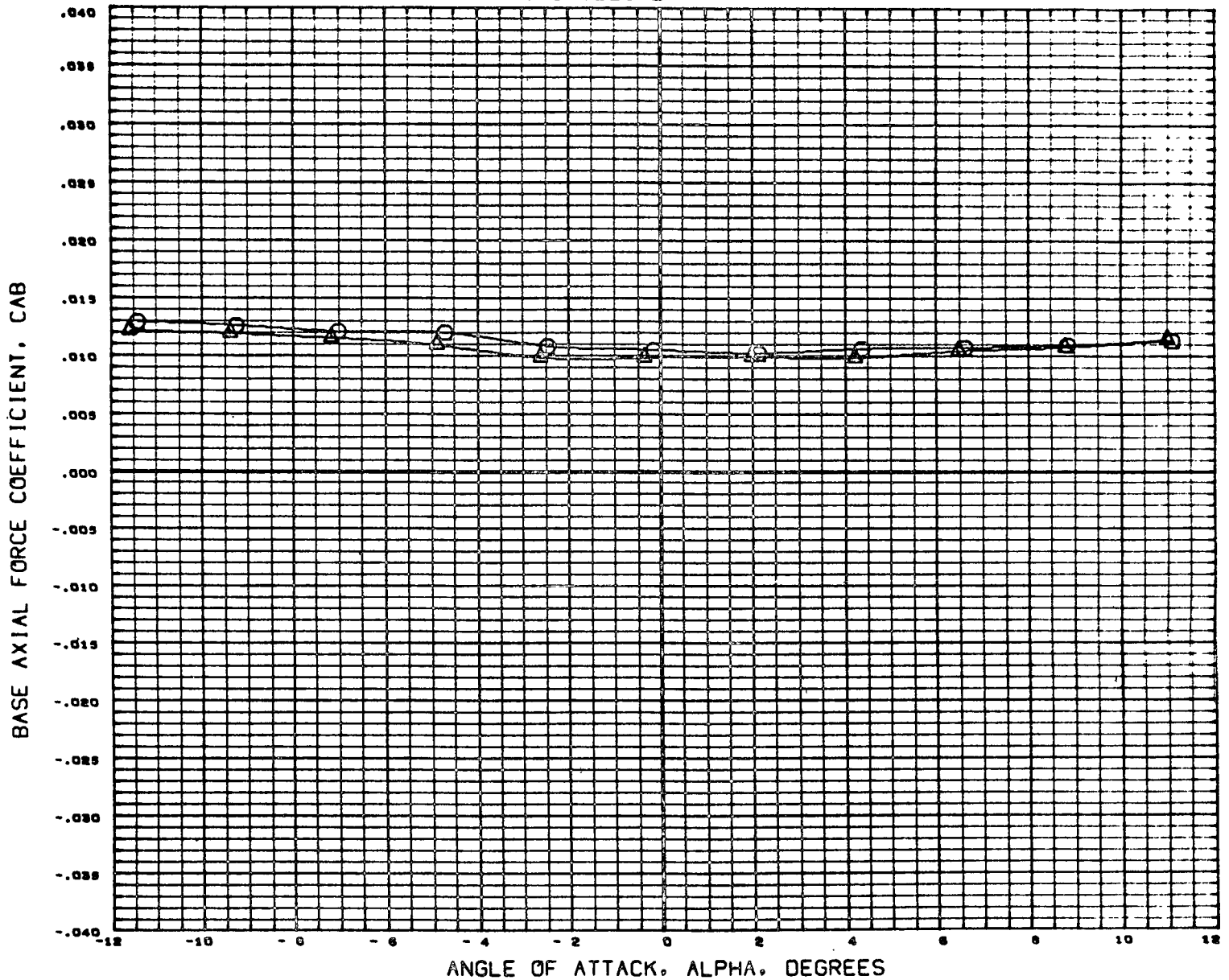
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13250A)	MSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17
(13252A)	MSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



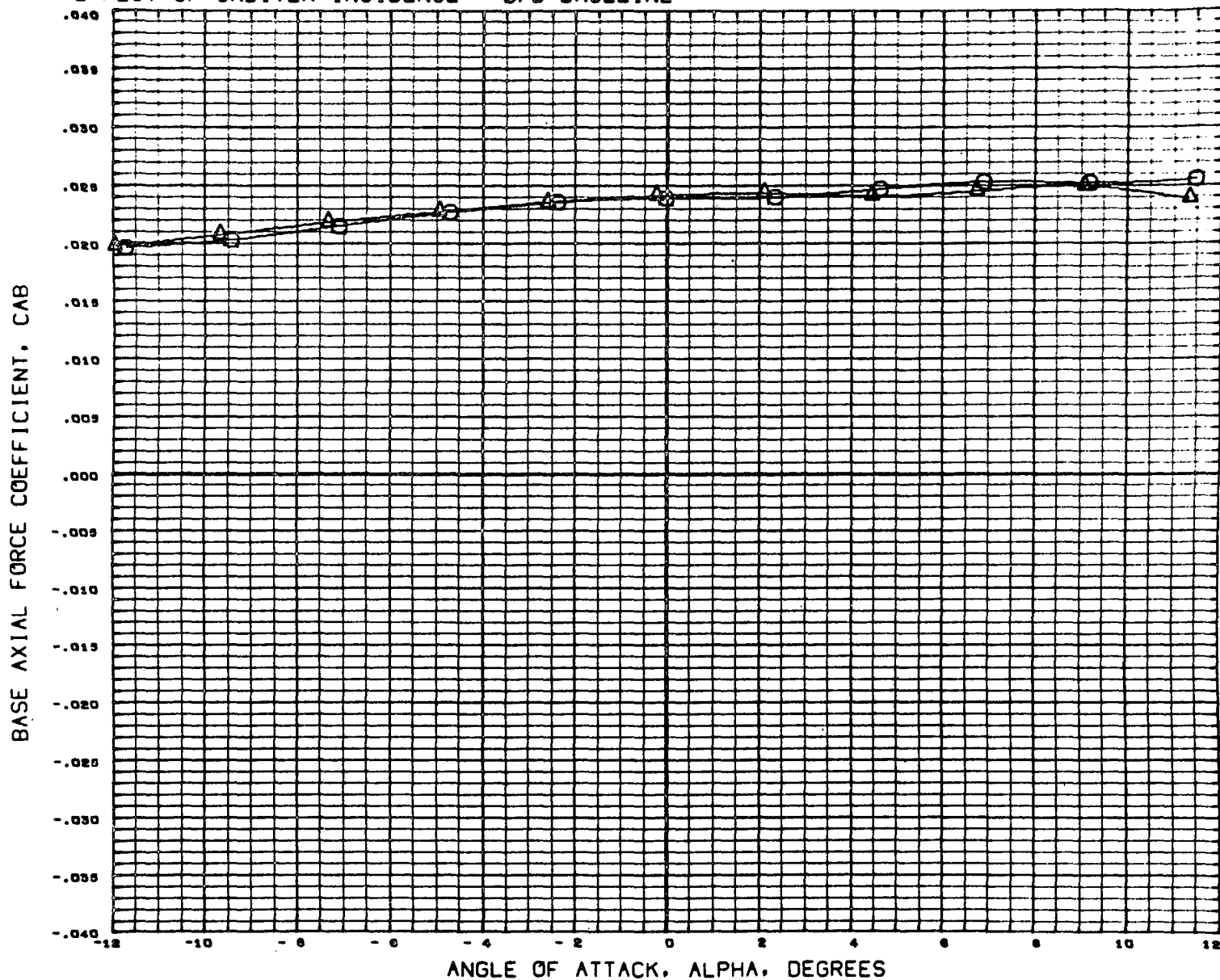
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8-B5W17V17
(13252A)	MSFC490 NR/GD LAUNCH B20C4BW14V8-B5W17V17

ORBIT INC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE

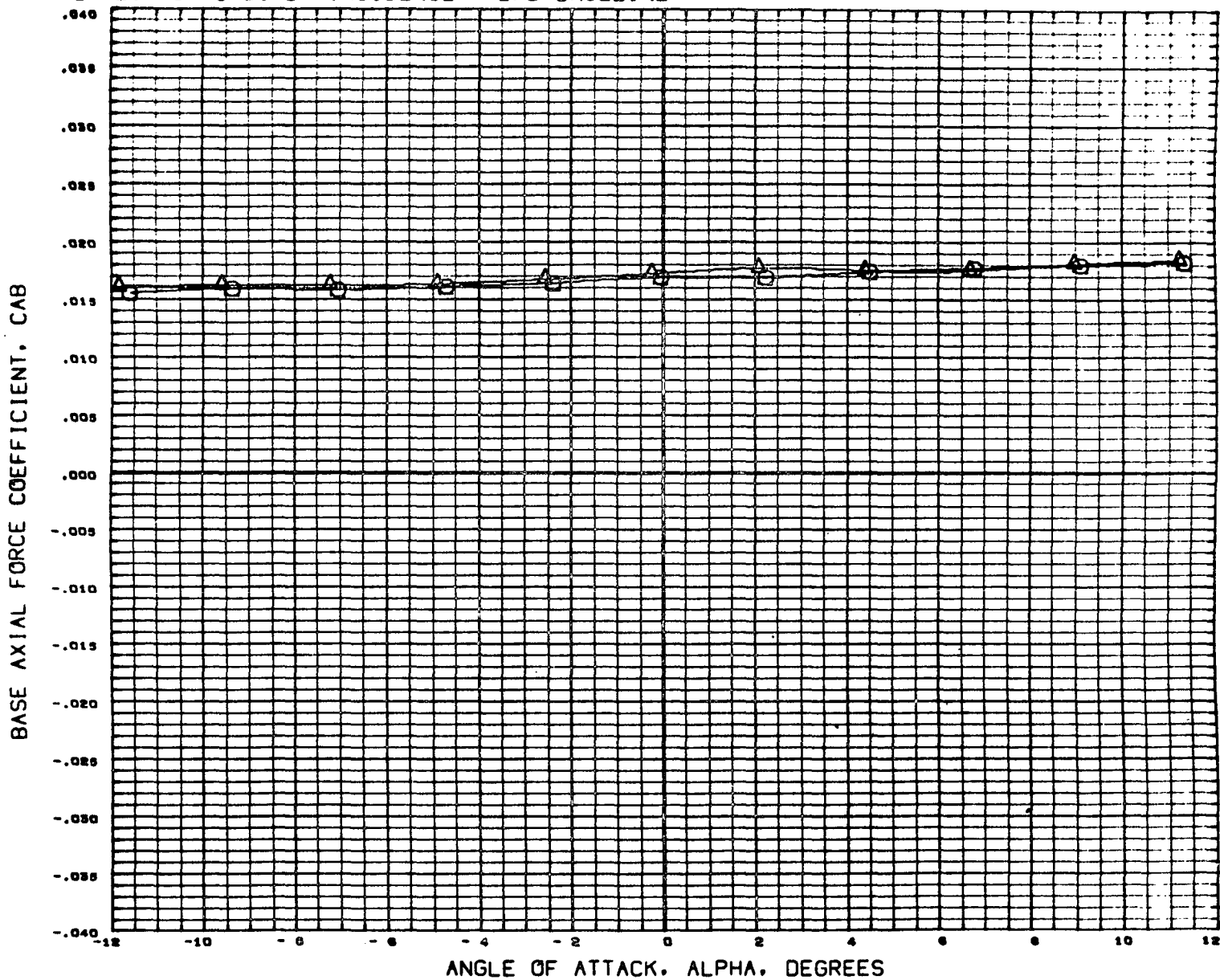


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3290A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B3W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 30 IN
(H3292A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B3W17V17	2.000	4.000	0.000	0.000	LREF	3.0990 INCHES
						BREF	6.0990 INCHES
						YMRP	0.0000
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						SCALE	0.0039 SCALE

MACH 1.10

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE

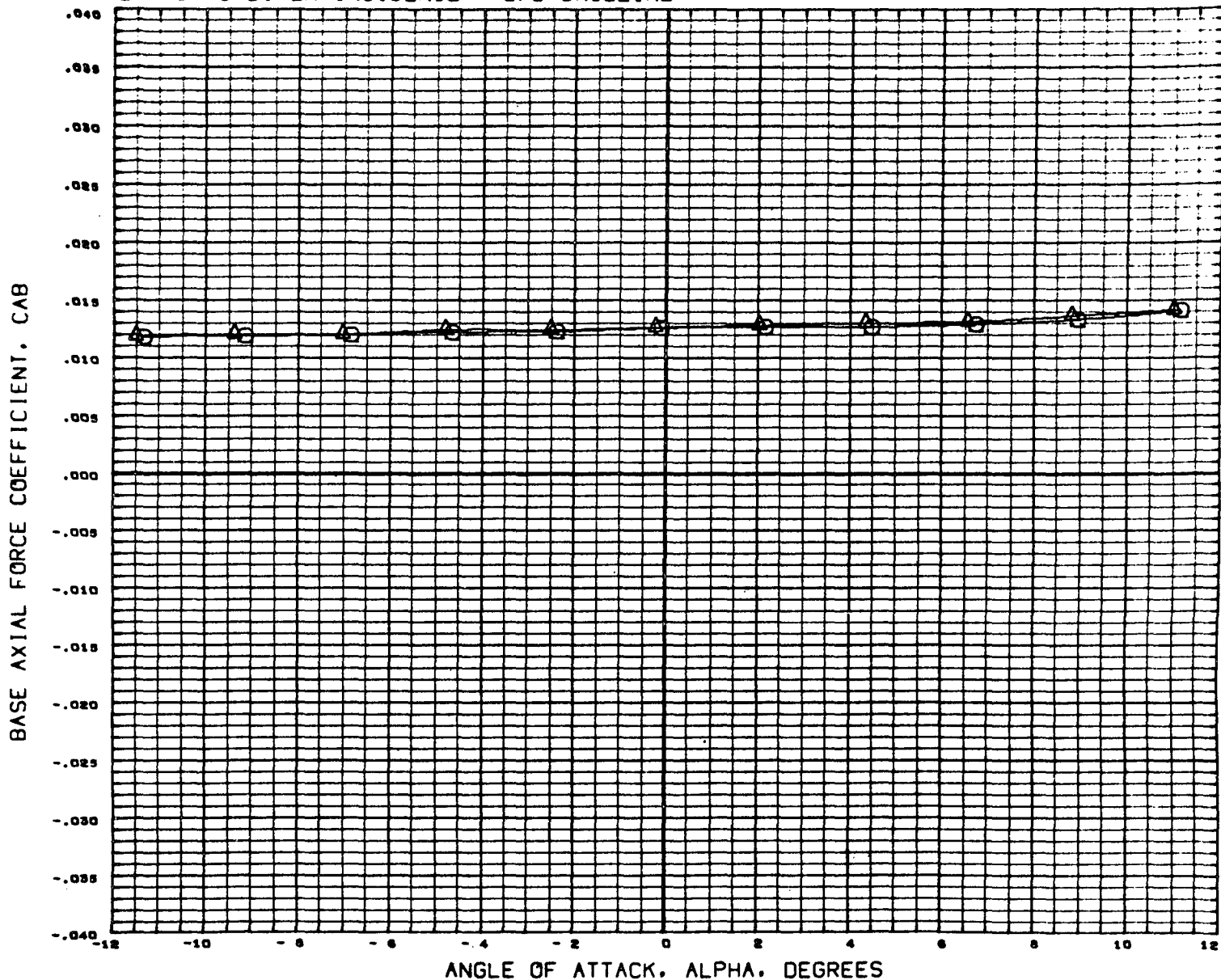


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14VG+BSW17V17	0.000	4.000	0.000	0.000	SREF	15.6960 SQ IN
(13252A)	MSFC490 NR/GD LAUNCH B20C4BW14VG+BSW17V17	2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



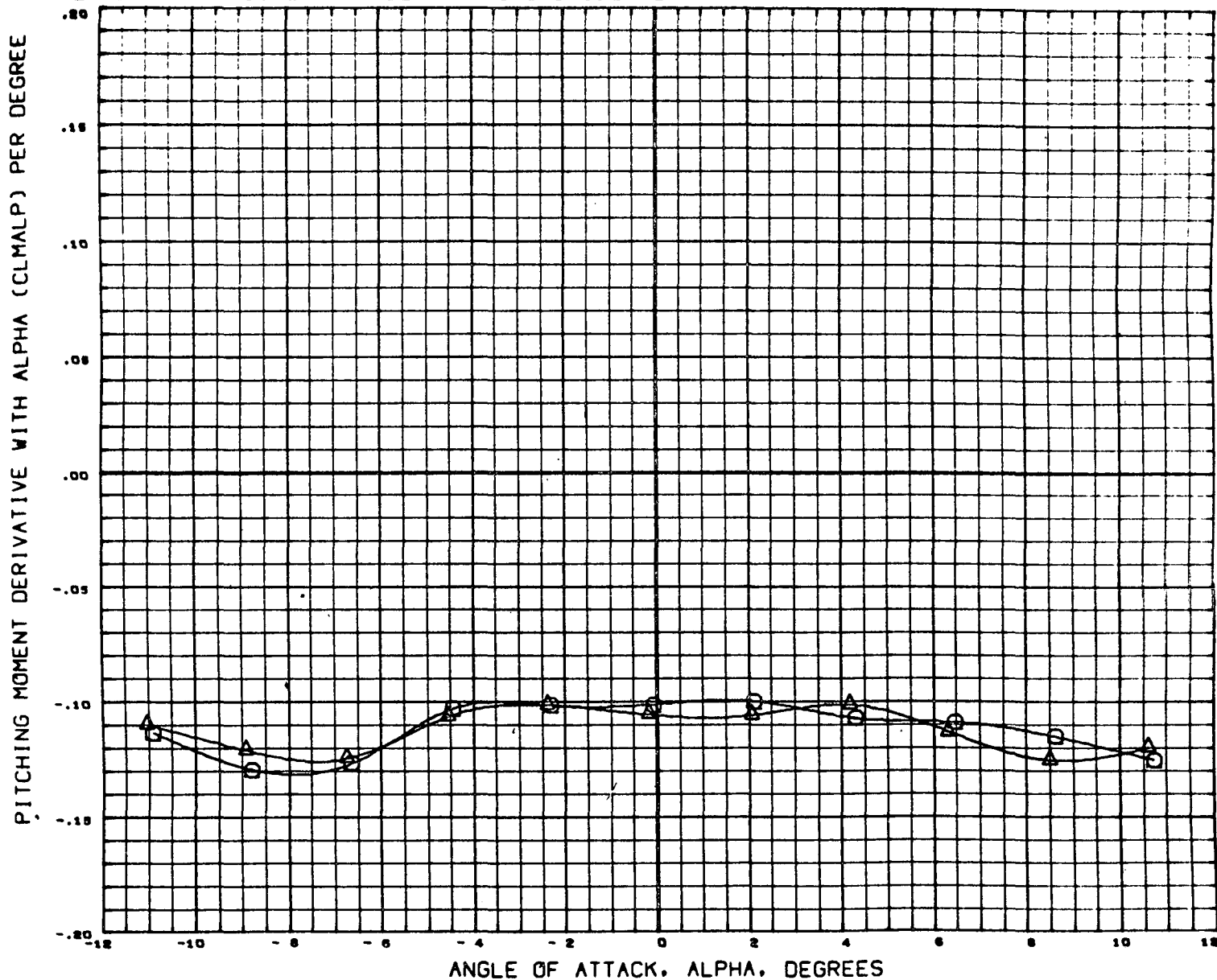
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17
(13252A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE

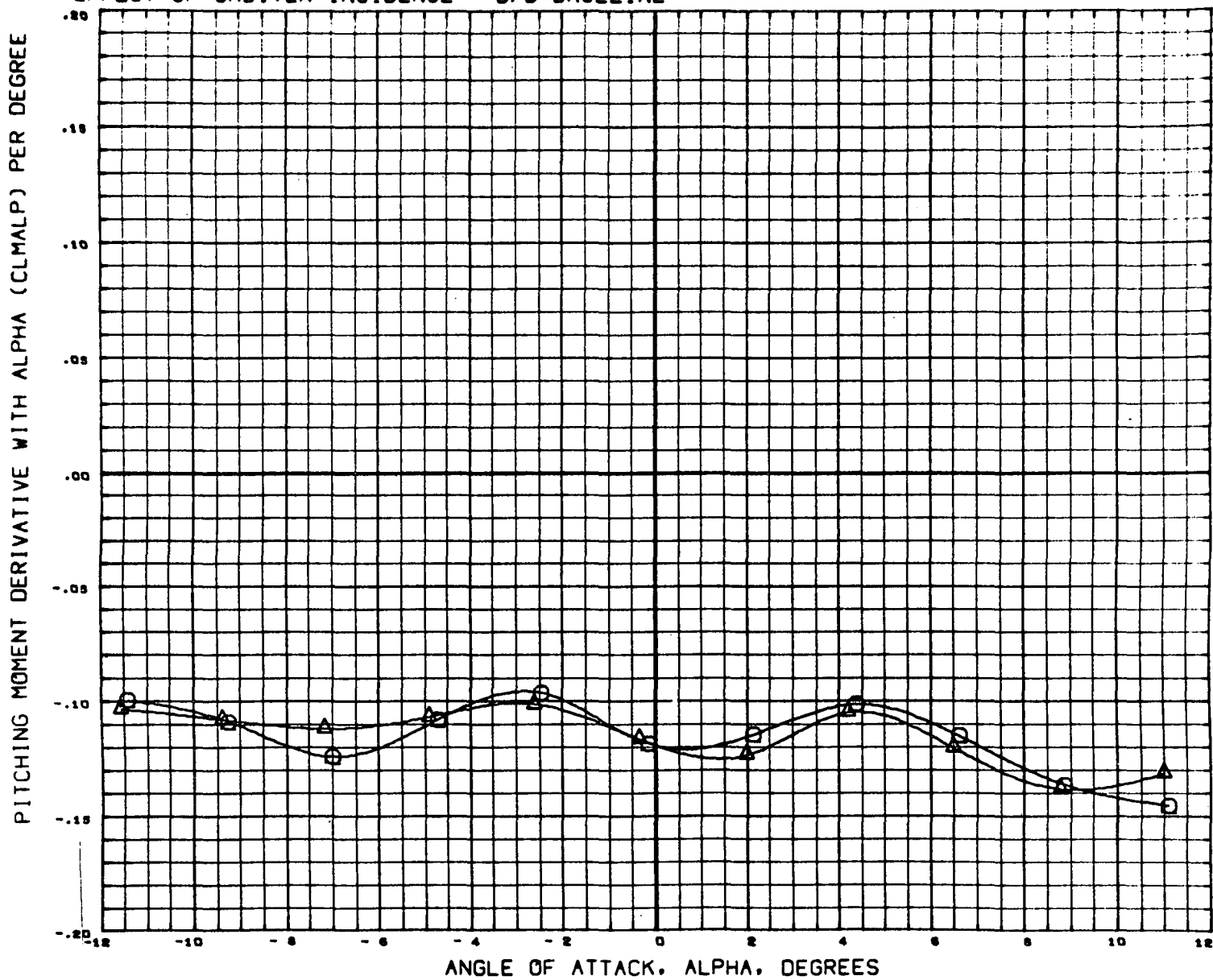


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBITER	POSITION	BETA	ELVATR	REFERENCE INFORMATION	
(J3250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(J3252A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3250A)	HSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(J3252A)	HSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

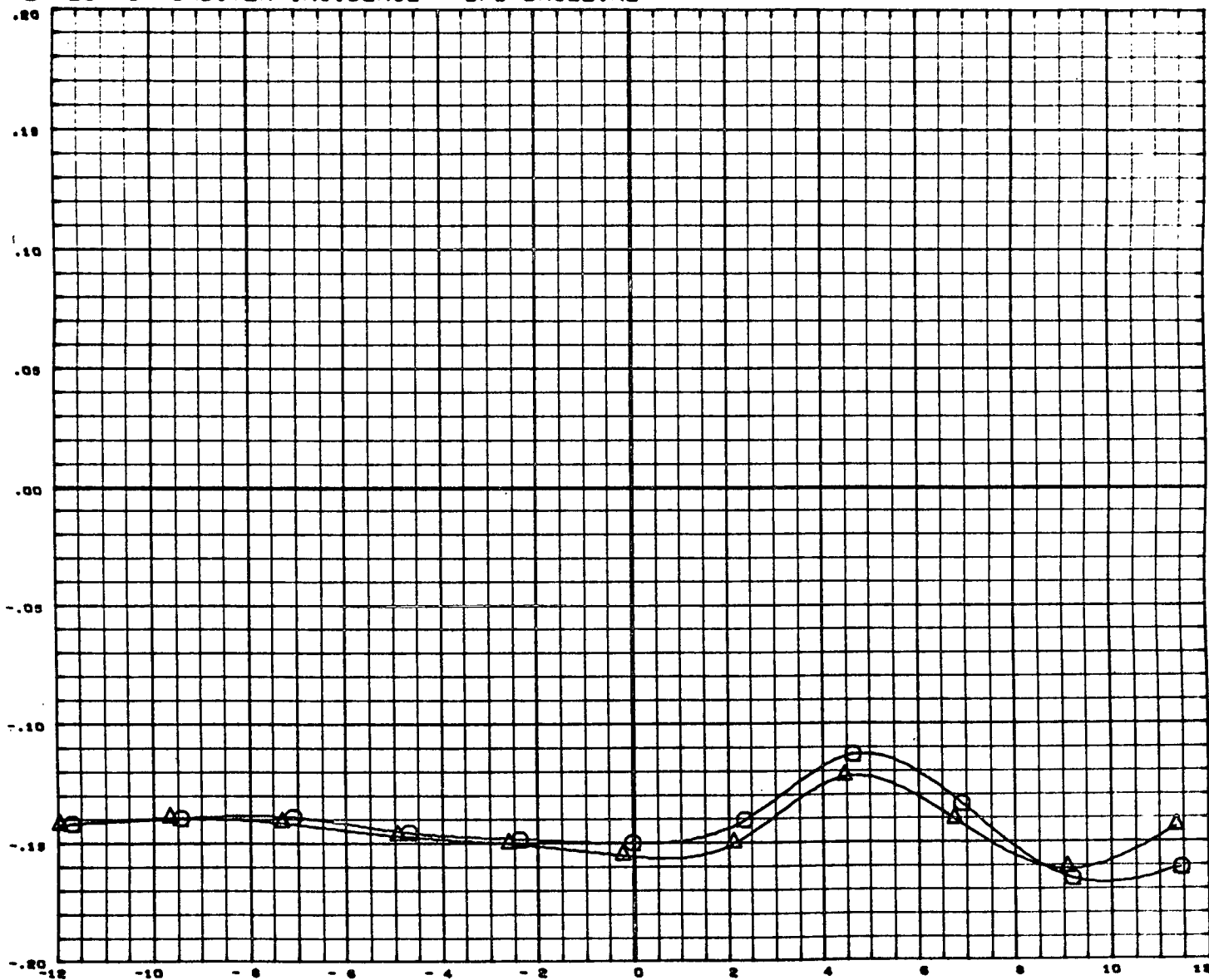
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3250A)	MSFC490 NR/6D LAUNCH B20C48W14V8+B3W17V17
(J3252A)	MSFC490 NR/6D LAUNCH B20C48W14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
2.000	4.000	0.000	0.000

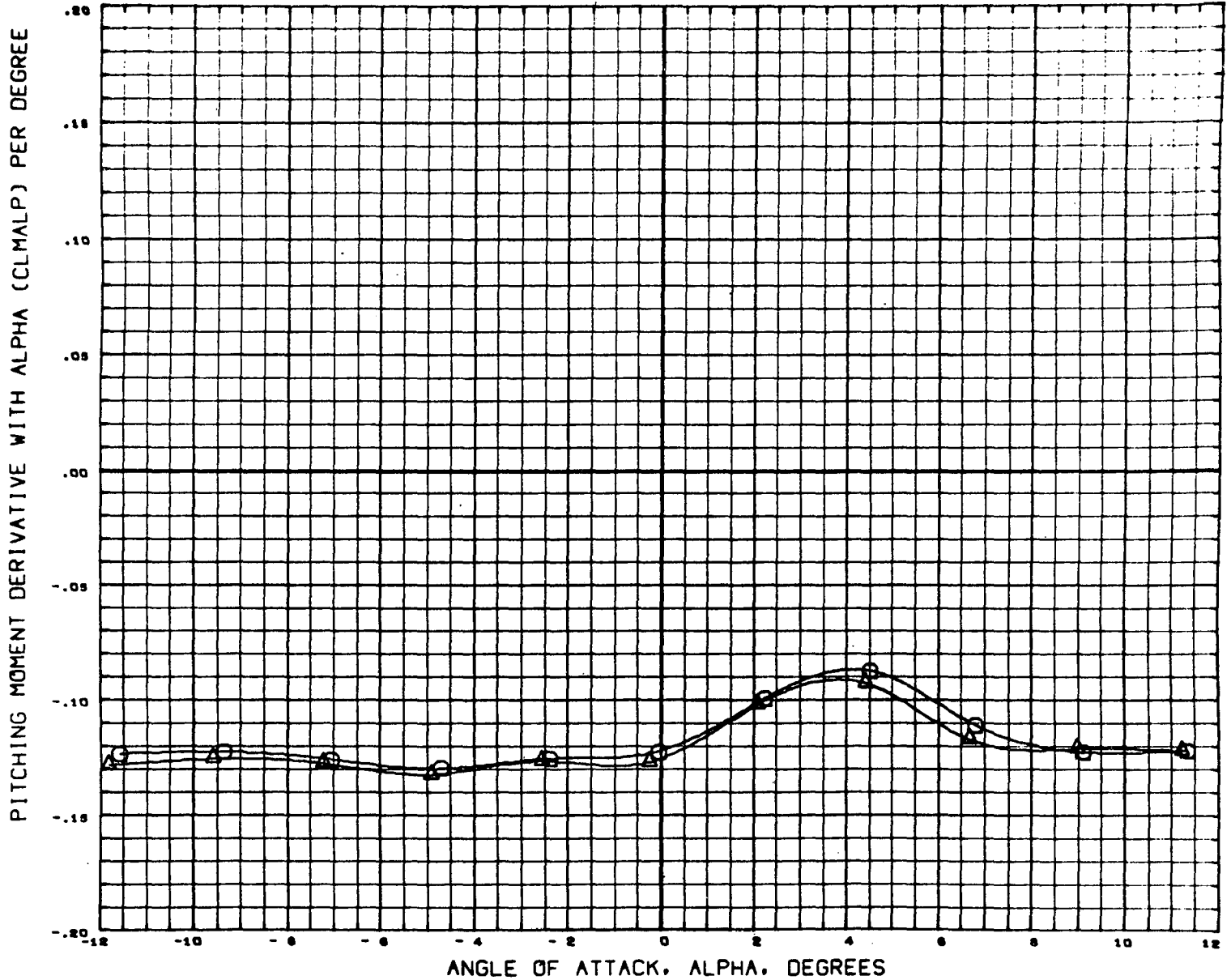
REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH

1.10

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3250A)	MSPC490 NR/GD LAUNCH B20C48W14V6+B5W17V17
(J3252A)	MSPC490 NR/GD LAUNCH B20C48W14V6+B5W17V17

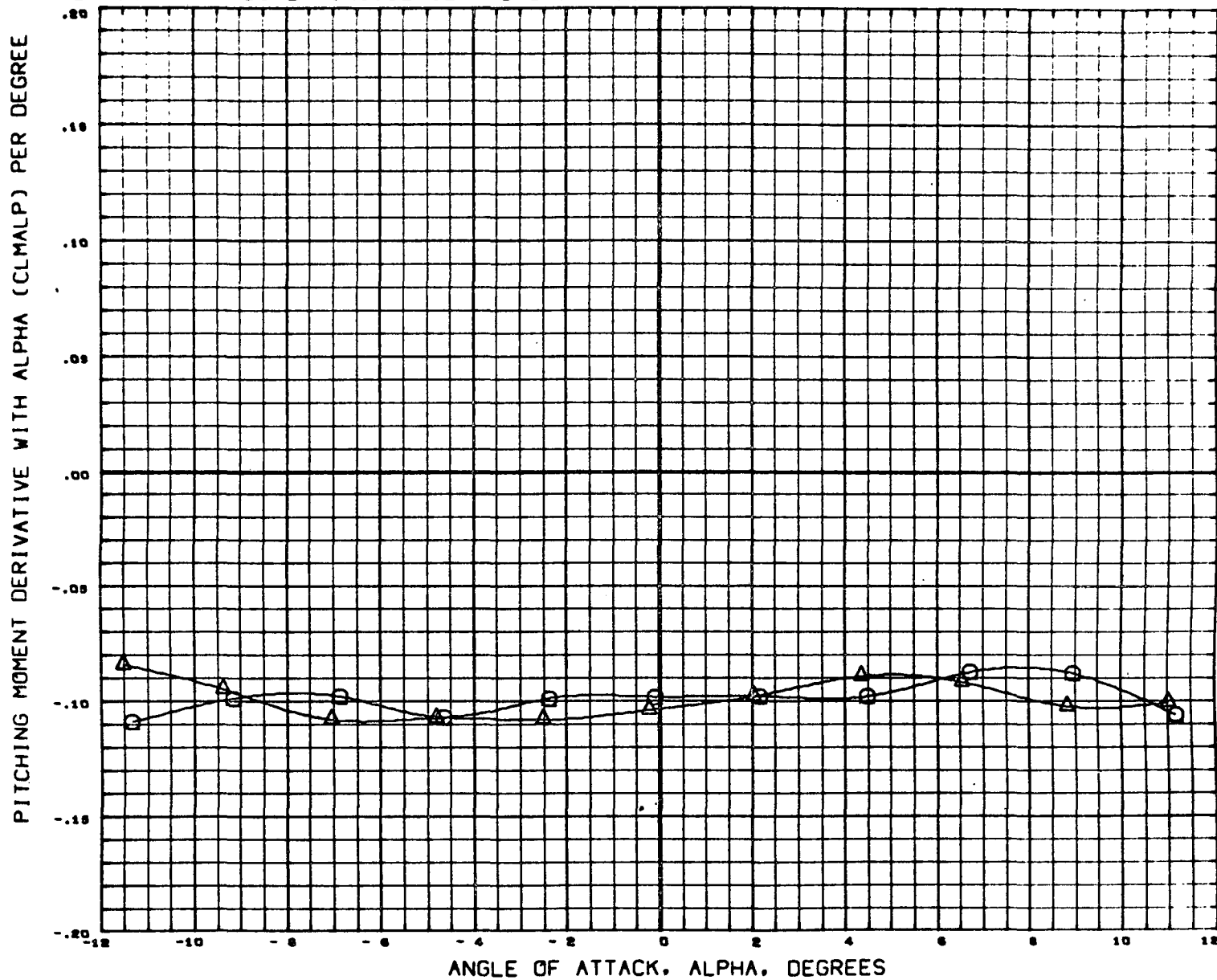
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
2.000	4.000	0.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.46

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE

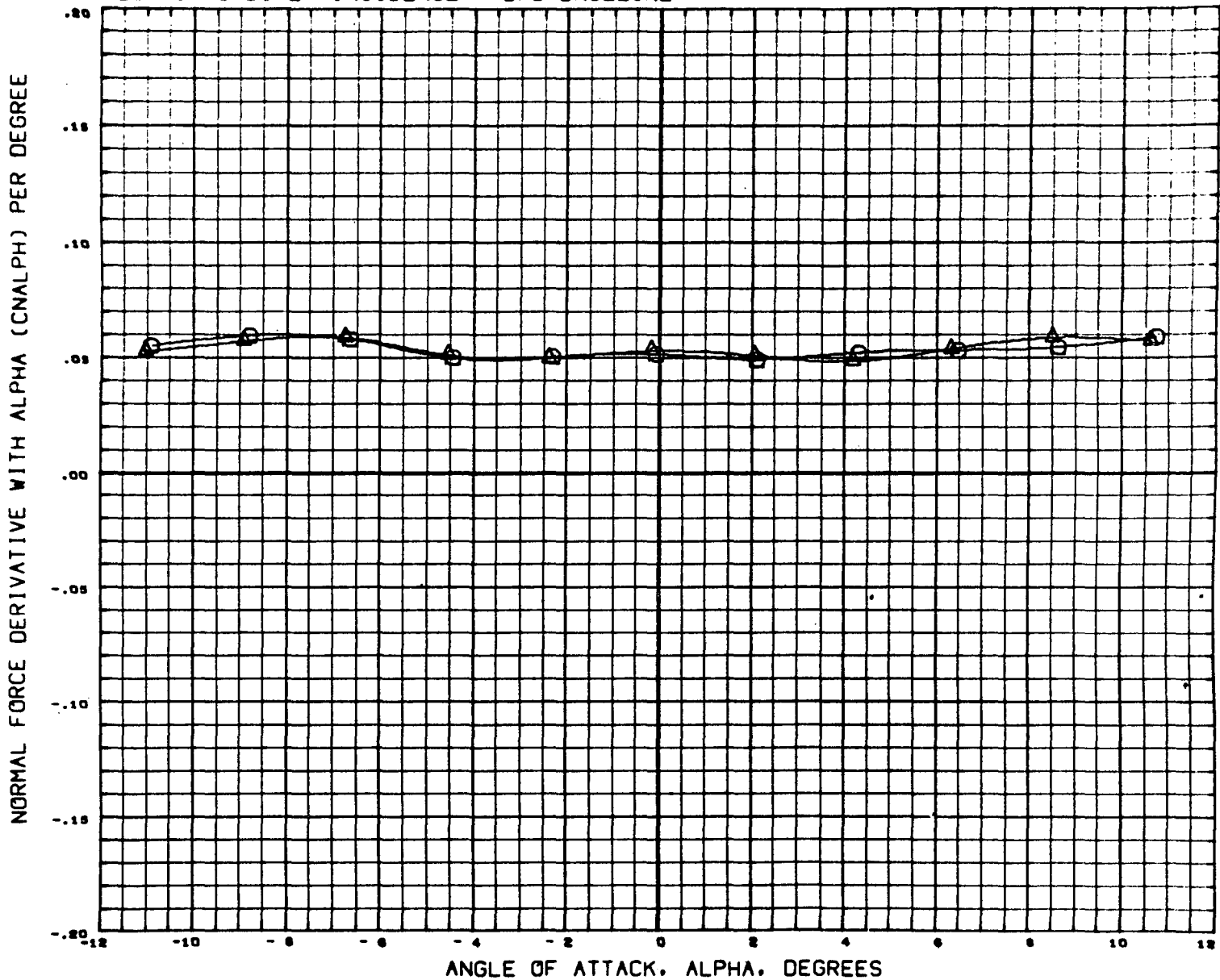


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(J3250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(J3252A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



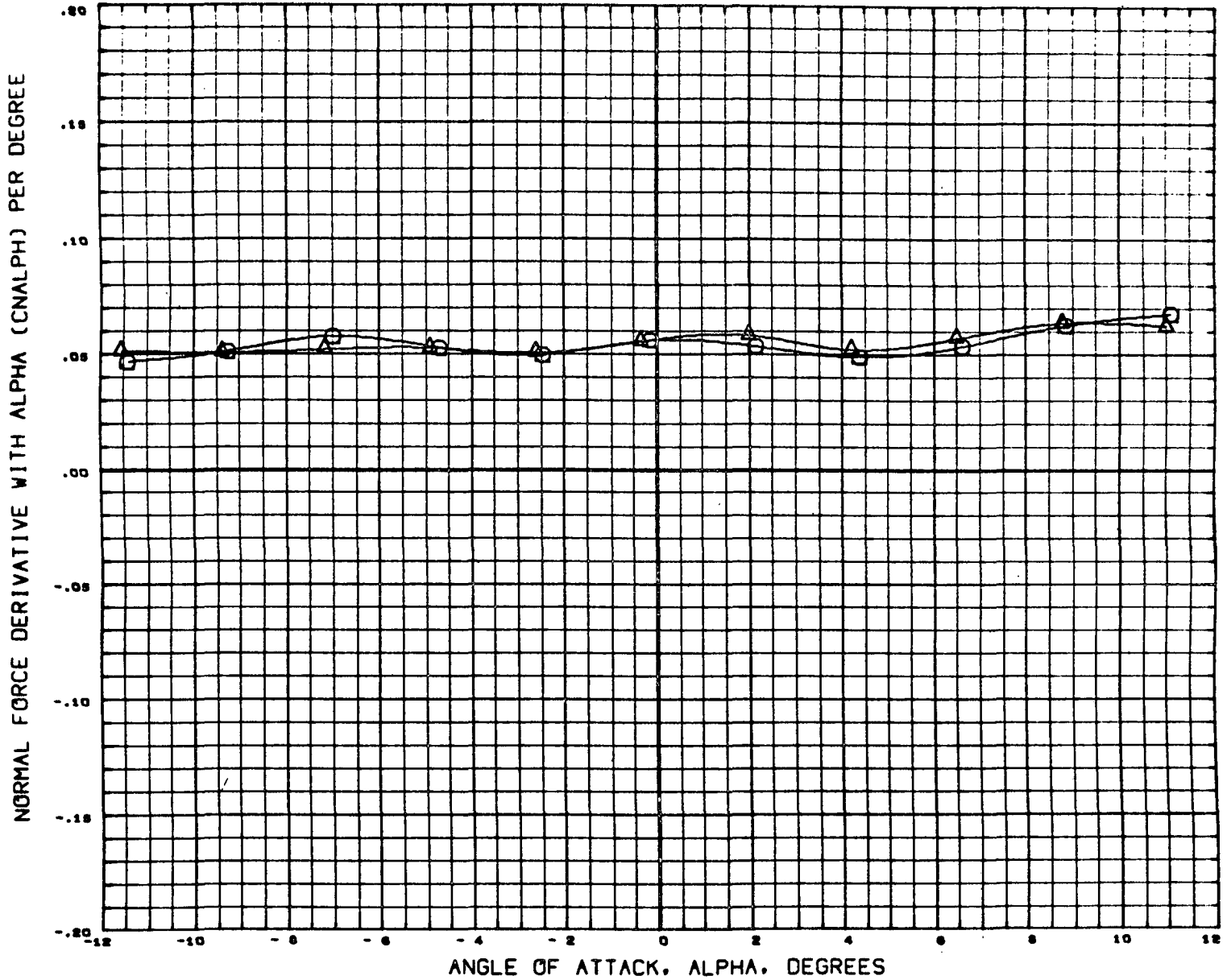
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3250A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17
(J3252A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 50 IN
2.000	4.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .60

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3250A) ○	HSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17
(J3252A) △	HSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17

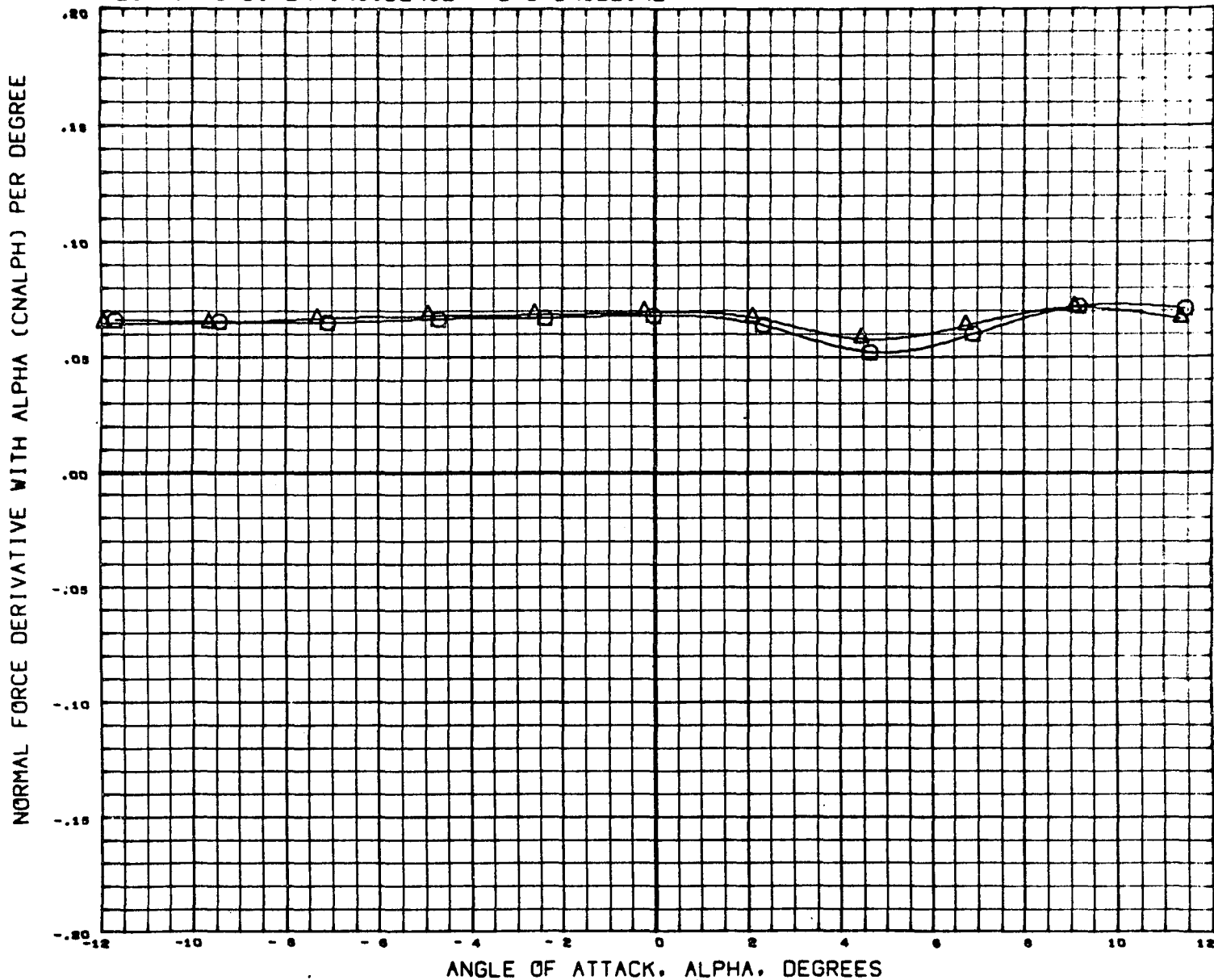
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
2.000	4.000	0.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

MACH .90

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



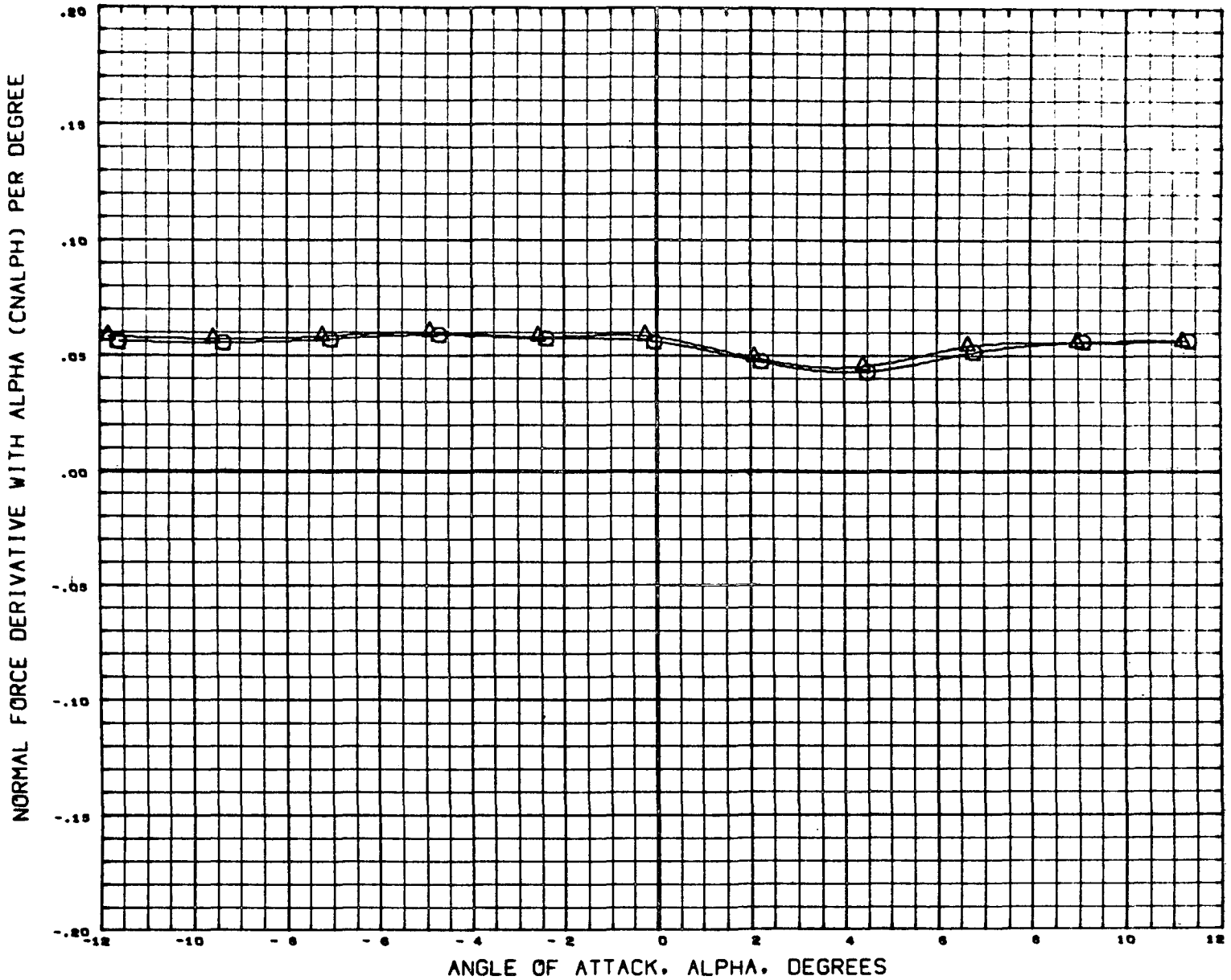
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ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	0.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.10

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3230A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(J3232A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
2.000	4.000	0.000	0.000

REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XHRP	0.0000
YHRP	0.0000
ZHRP	0.0000
SCALE	0.0035 SCALE

MACH

1.46

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(J3250A)	MSFC490 NR/GD LAUNCH 820C4BW14V6+85W17V17	0.000	4.000	0.000	0.000	SREF	15.6360 SQ IN
(J3252A)	MSFC490 NR/GD LAUNCH 820C4BW14V6+85W17V17	2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH 1.96

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE

ALPHA = 0.



MACH NUMBER

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3250A) MSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17
 (J3252A) MSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17

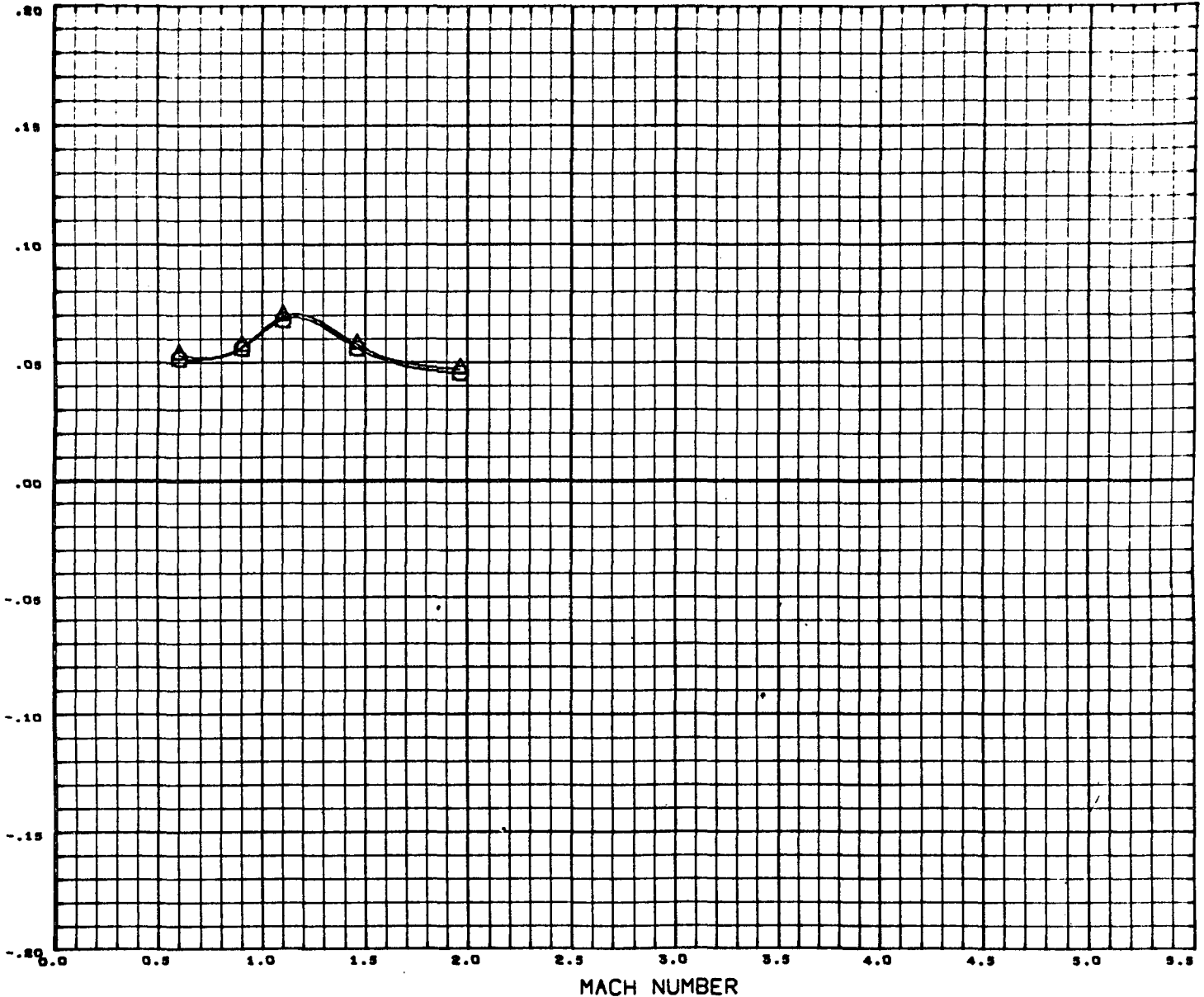
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6360 80 IN
2.000	4.000	0.000	0.000	LREF 3.0930 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

EFFECT OF ORBITER INCIDENCE - B/B BASELINE

ALPHA = 0.

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



MACH NUMBER

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K3230A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(J3232A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

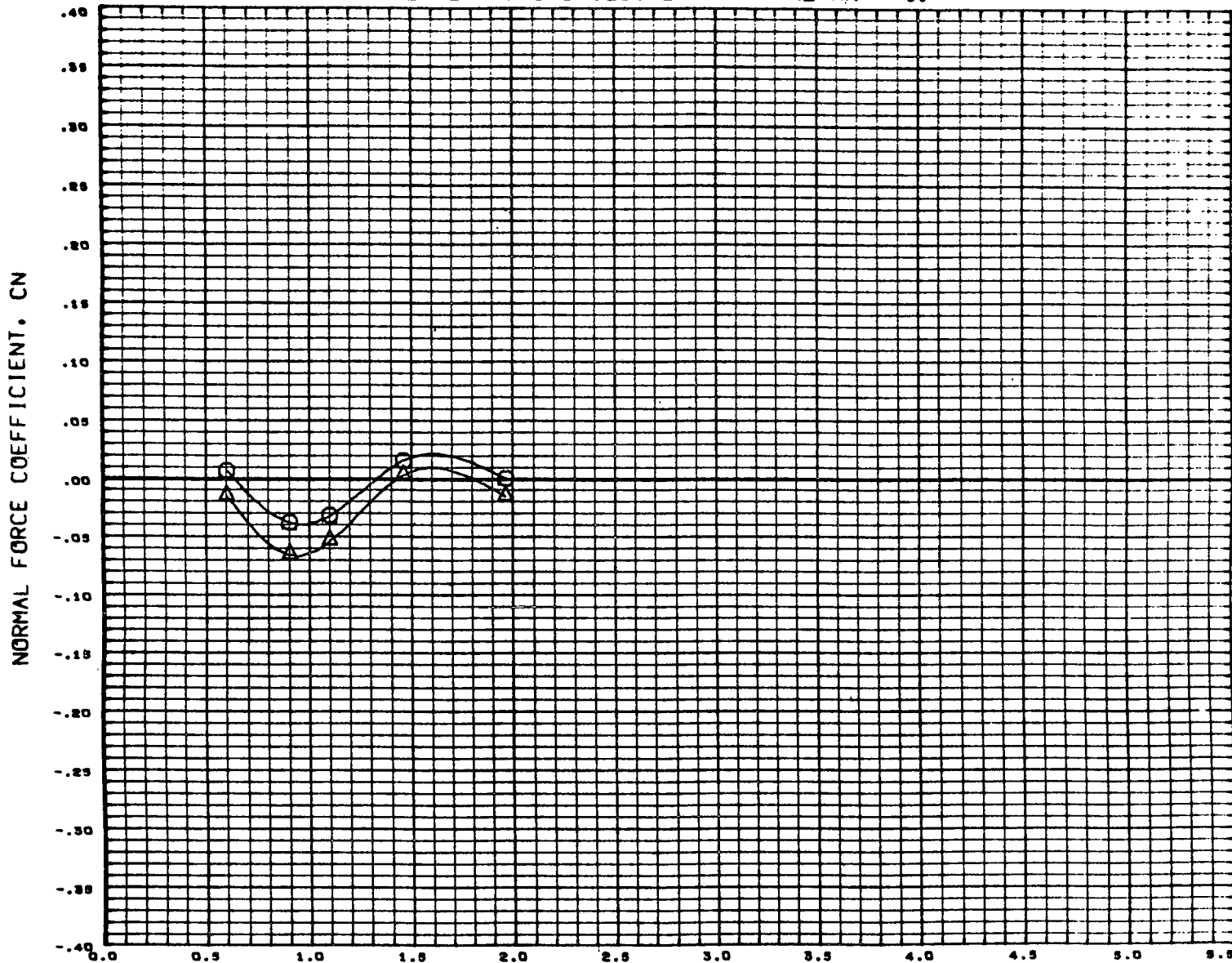
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.8560 SQ IN
2.000	4.000	0.000	0.000	LREF 3.0990 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0033 SCALE

ALPHA .00

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE

ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(L3250A)	MSFC490 NR/60 LAUNCH B20C4BW14V8+85W17V17
(K3252A)	MSFC490 NR/60 LAUNCH B20C4BW14V8+85W17V17

MACH NUMBER

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREP 15.6560 SQ IN
2.000	4.000	0.000	0.000	LREP 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE



ALPHA .00

EFFECT OF ORBITER INCIDENCE - B/B BASELINE

ALPHA = 0.

PITCHING MOMENT COEFFICIENT, CLM



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(L3290A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(K3292A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

MACH NUMBER

ORBITN	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

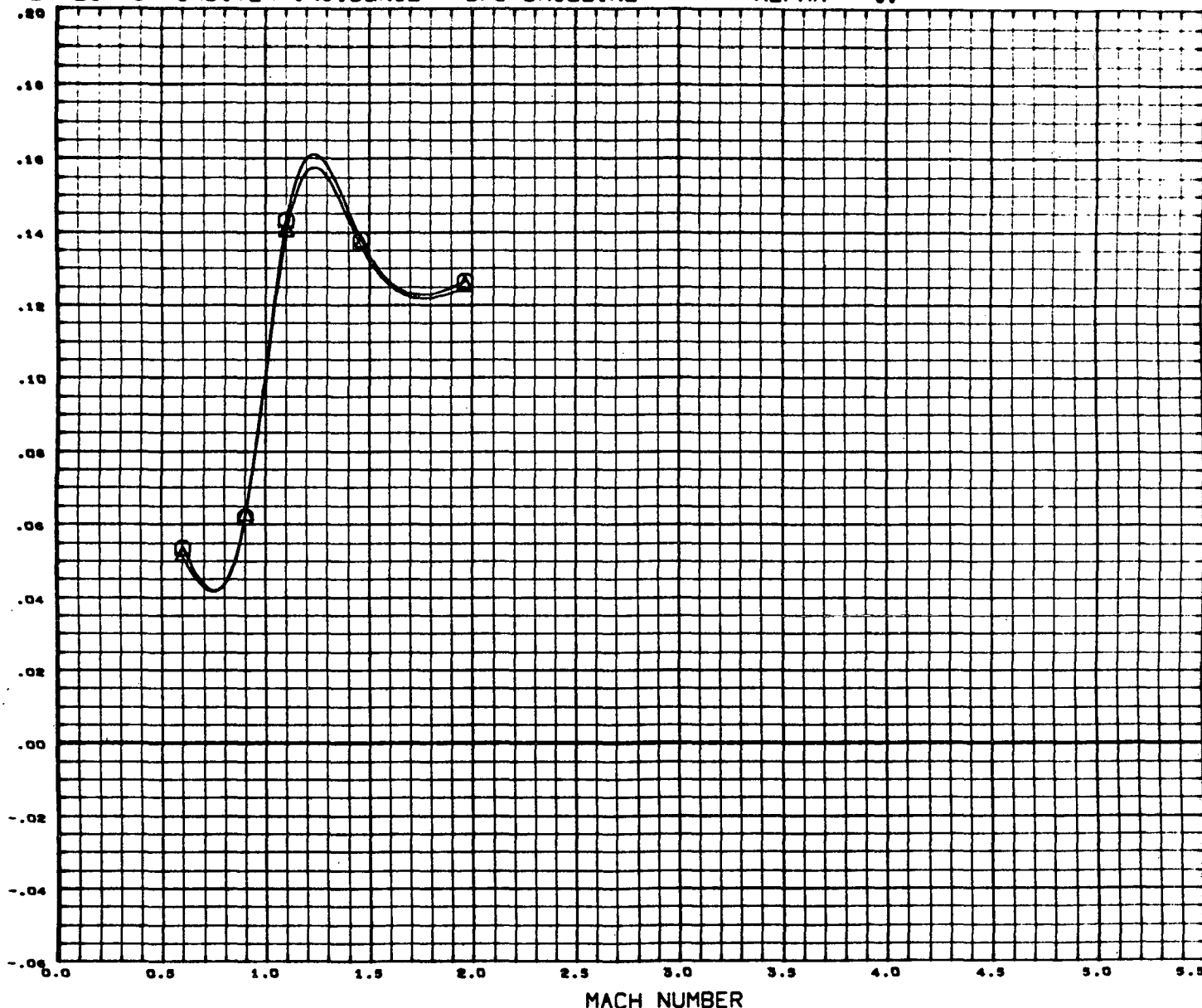
ALPHA .00

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EFFECT OF ORBITER INCIDENCE - B/B BASELINE

ALPHA = 0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(L3290A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(K3292A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

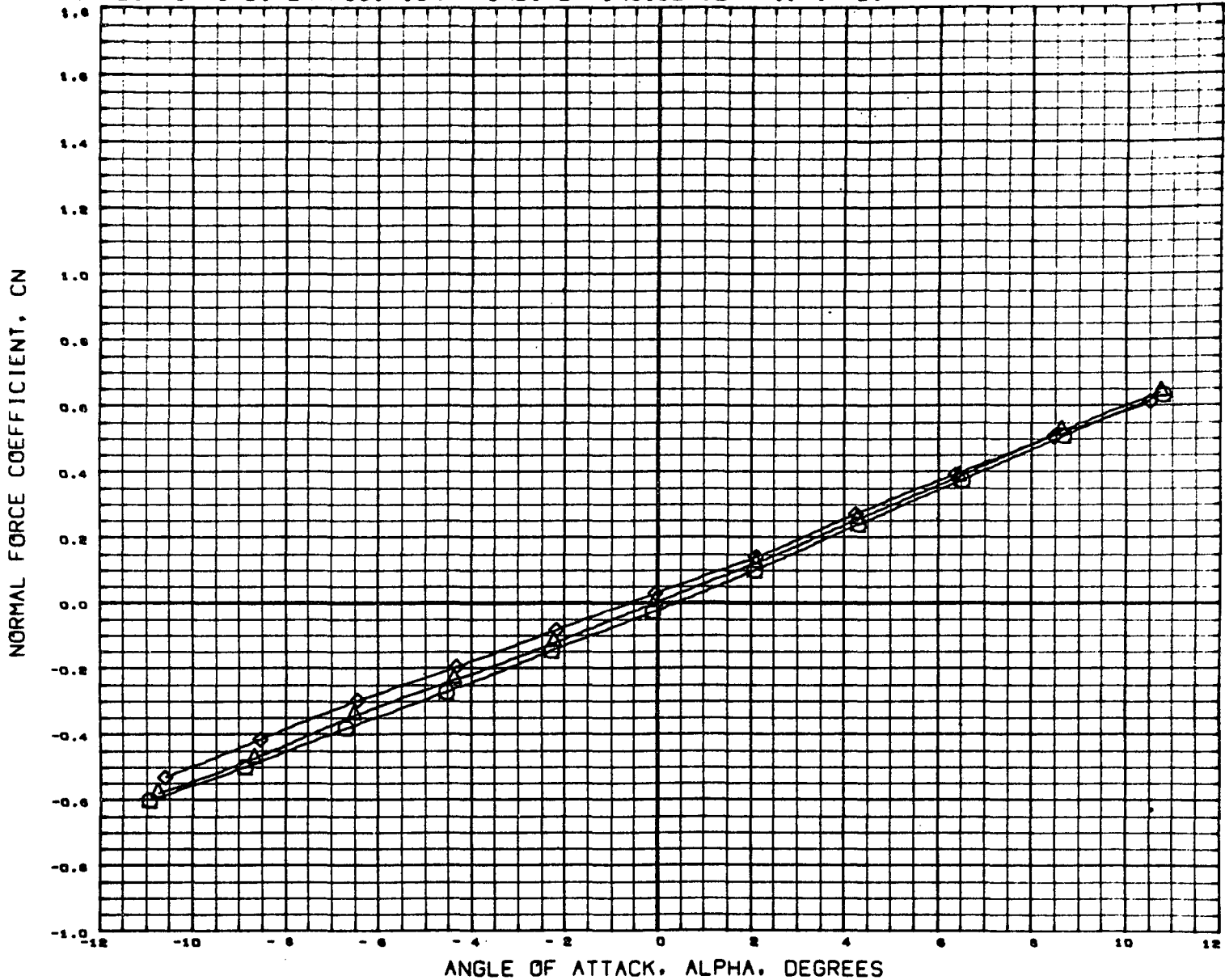
MACH NUMBER

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 19.6560 30 IN
2.000	4.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0039 SCALE

ALPHA .00

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

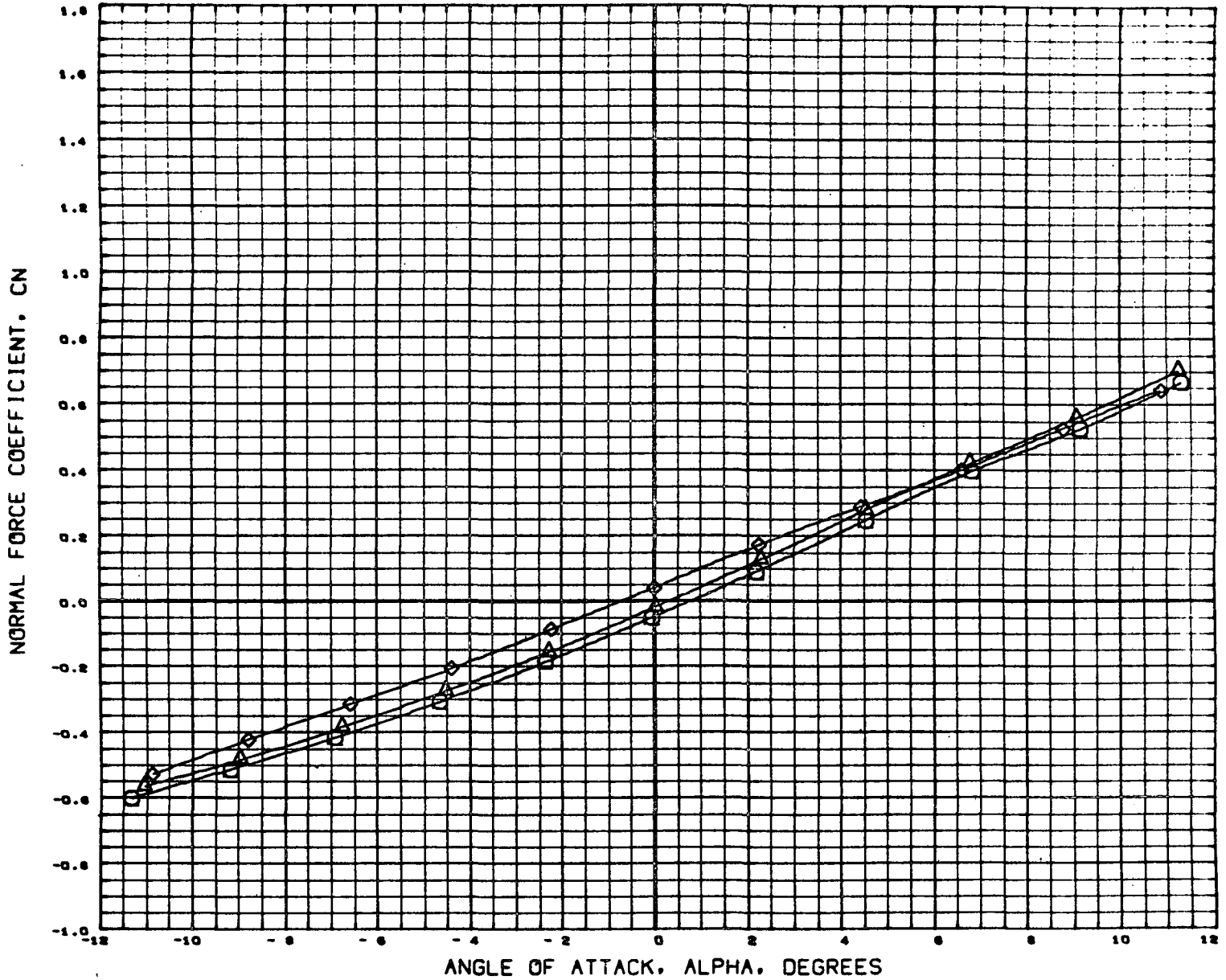


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6360 SQ IN
(H3238A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

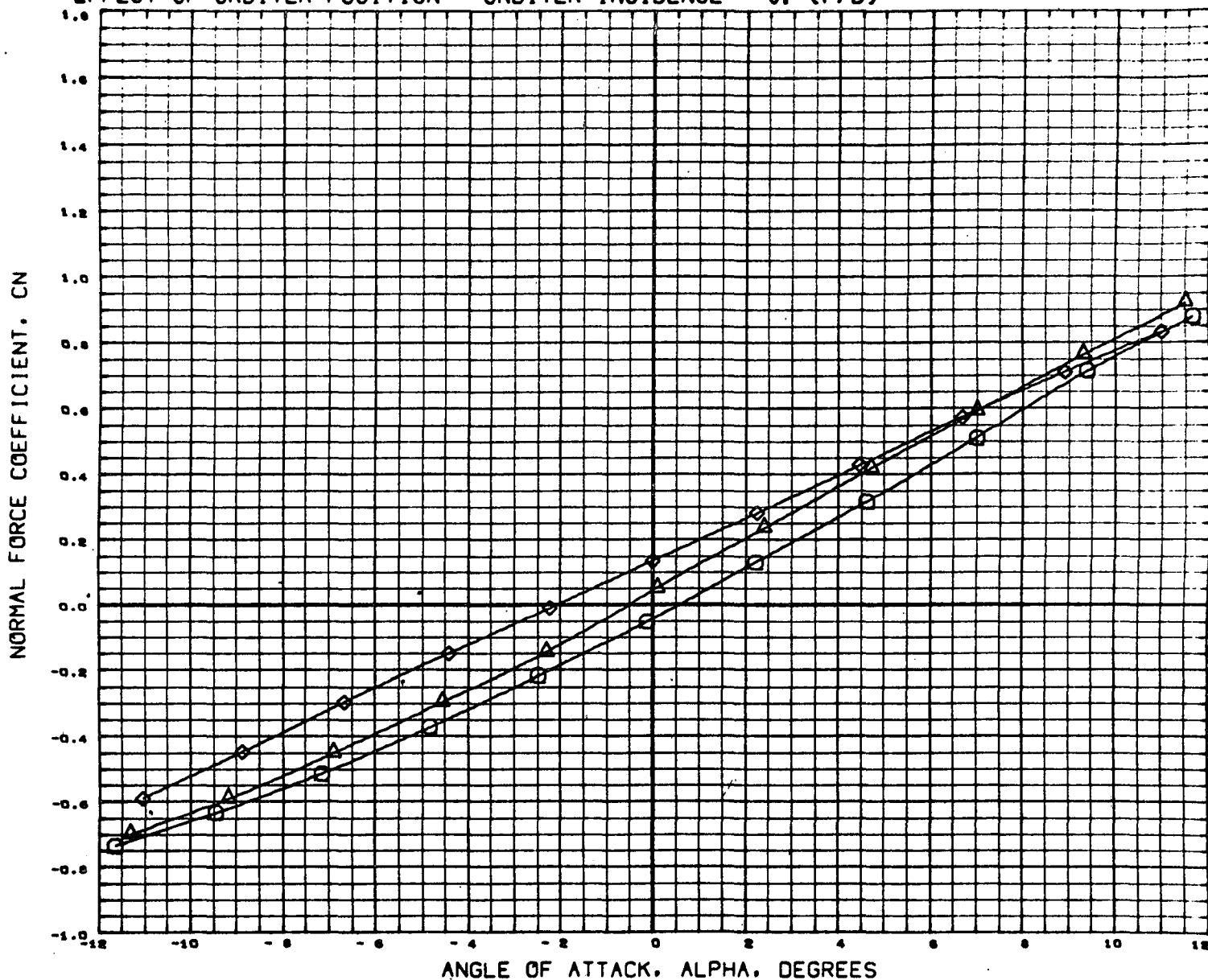


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(N3222A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 80 IN
(H3238A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH 82014BW14V8+85W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

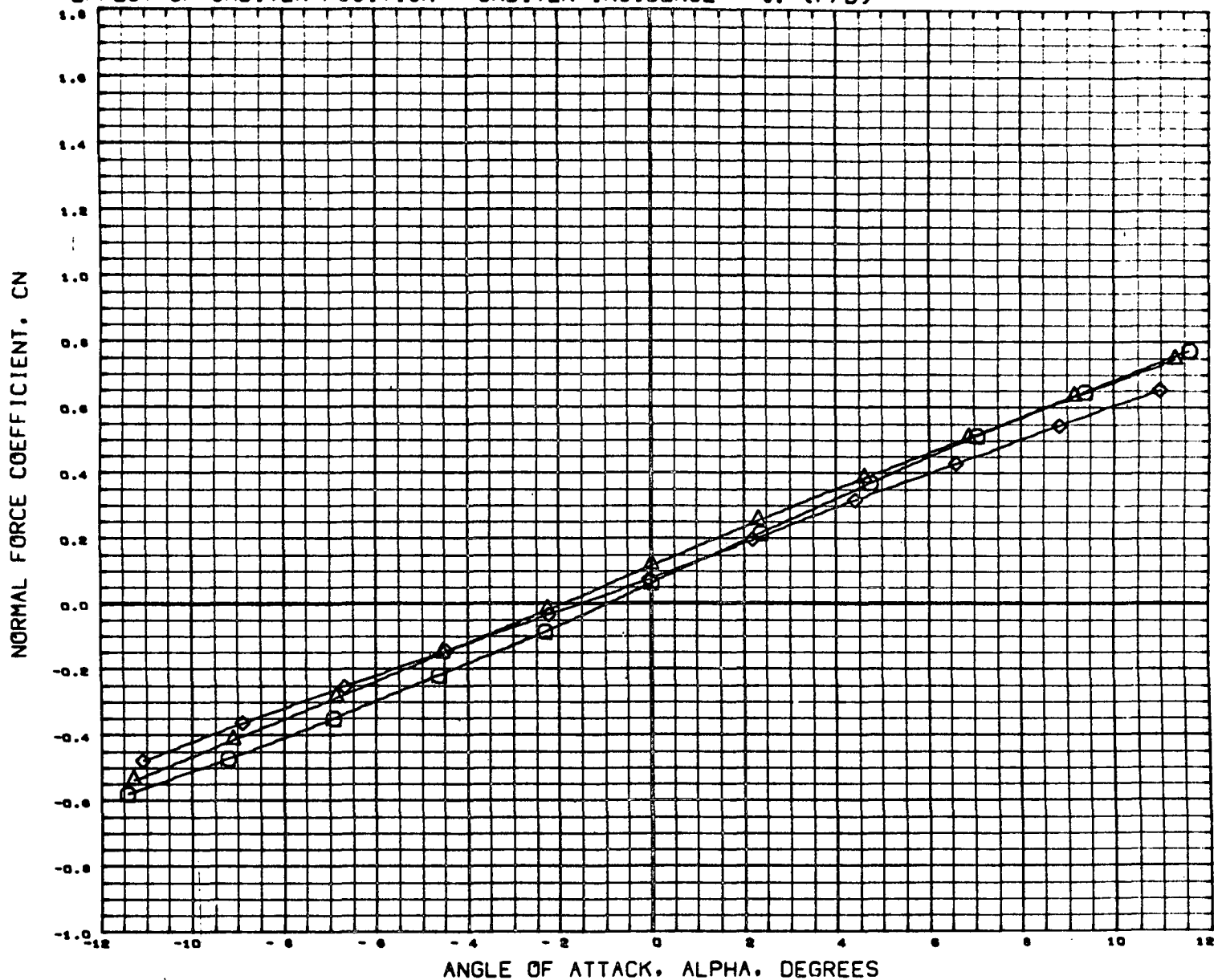


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(NS222A)	HSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(NS238A)	HSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(NS241A)	HSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.09

PAGE 123

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

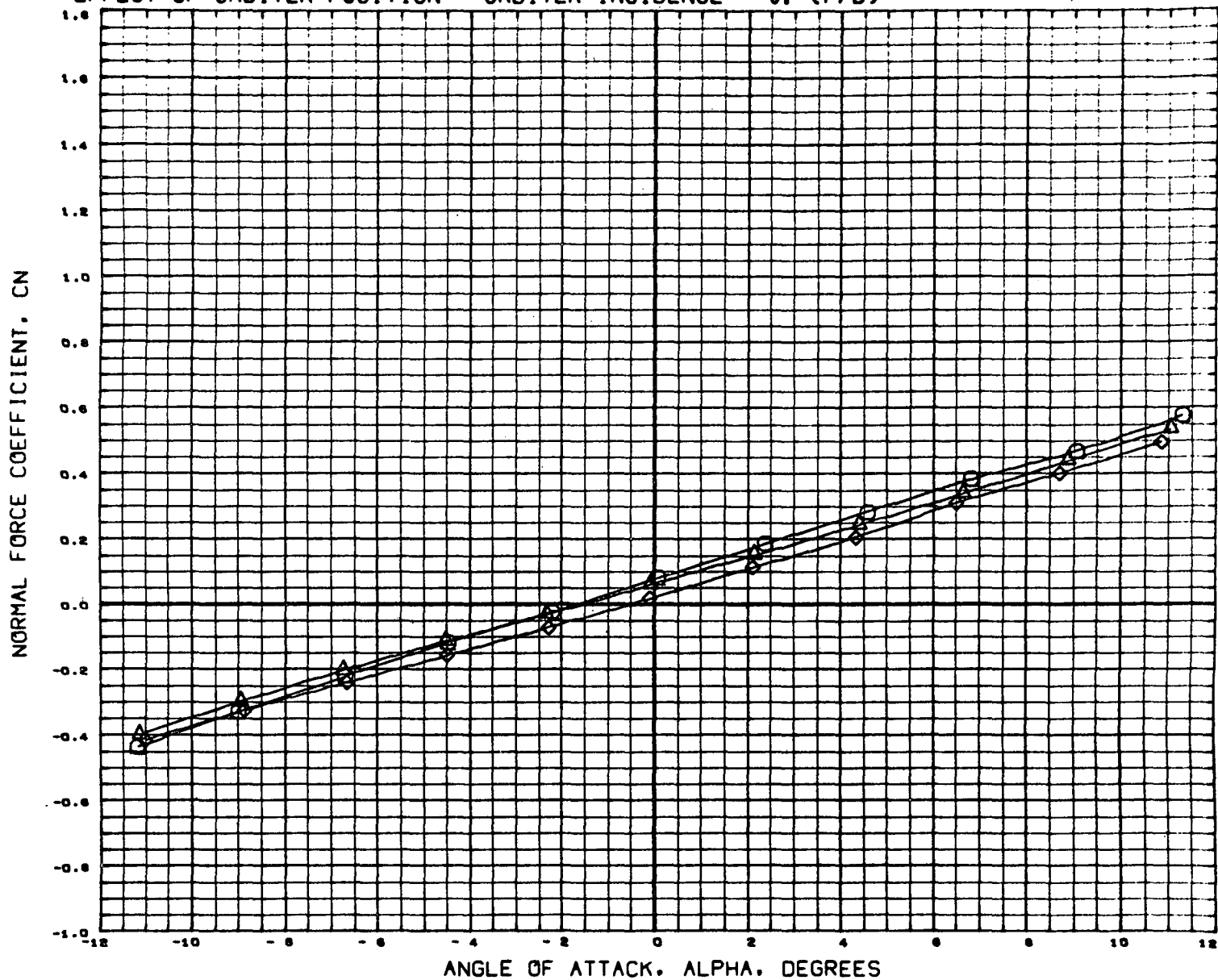


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(N3222A)	MSFC490 NR/GD LAUNCH B20C48W14V6+83W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(N3239A)	MSFC490 NR/GD LAUNCH B20C48W14V6+83W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(N3241A)	MSFC490 NR/GD LAUNCH B20148W14V6+83W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

PAGE 124

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

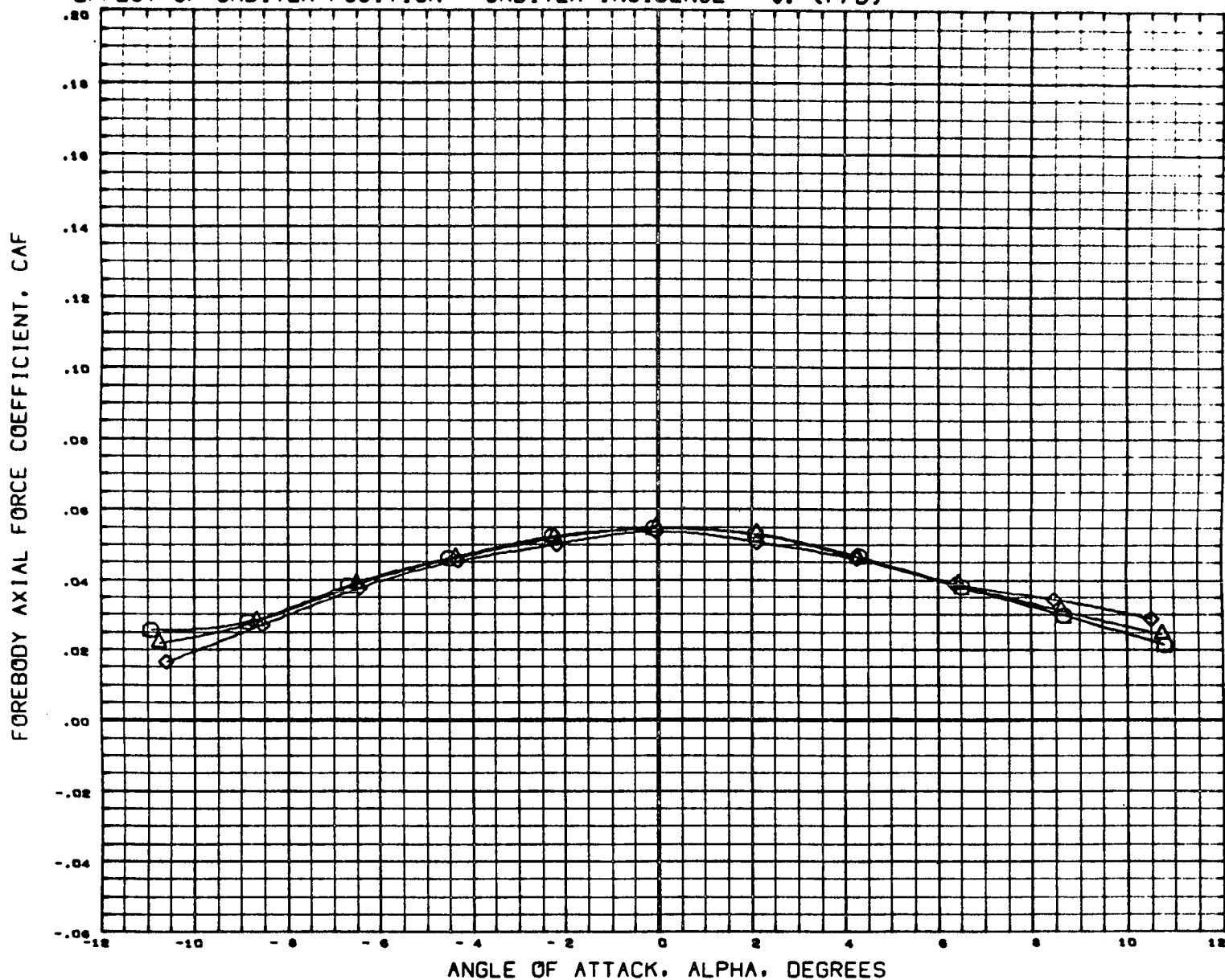


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	M3FC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6960 SQ IN
(H3239A)	M3FC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(H3241A)	M3FC490 NR/GD LAUNCH B2014BW14V6+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0039 SCALE

MACH 1.96

PAGE 125

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

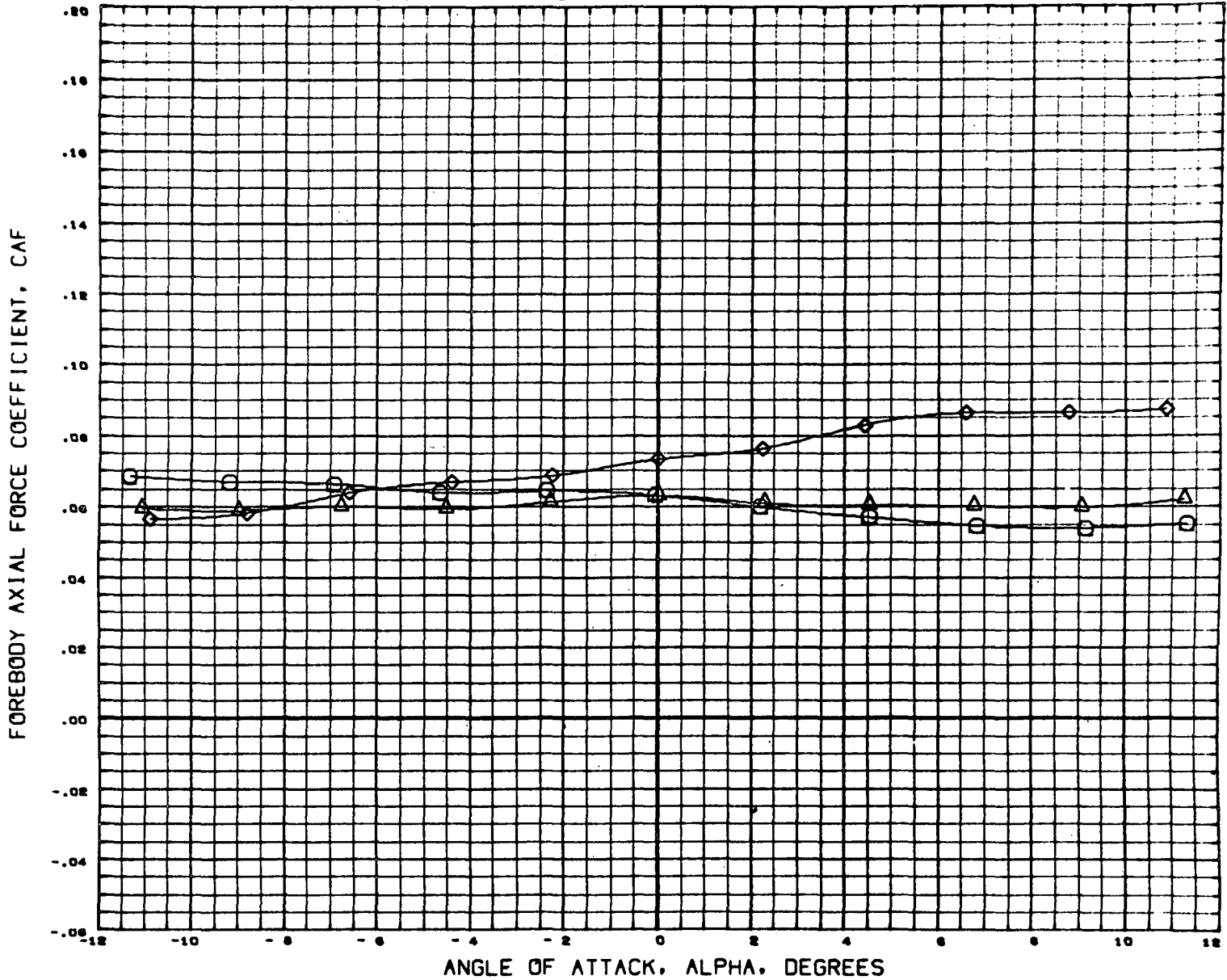


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(M3222A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B35W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(M3236A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B35W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(M3241A)	MSFC490 NR/GD LAUNCH B20148W14V8+B35W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

PAGE 126

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

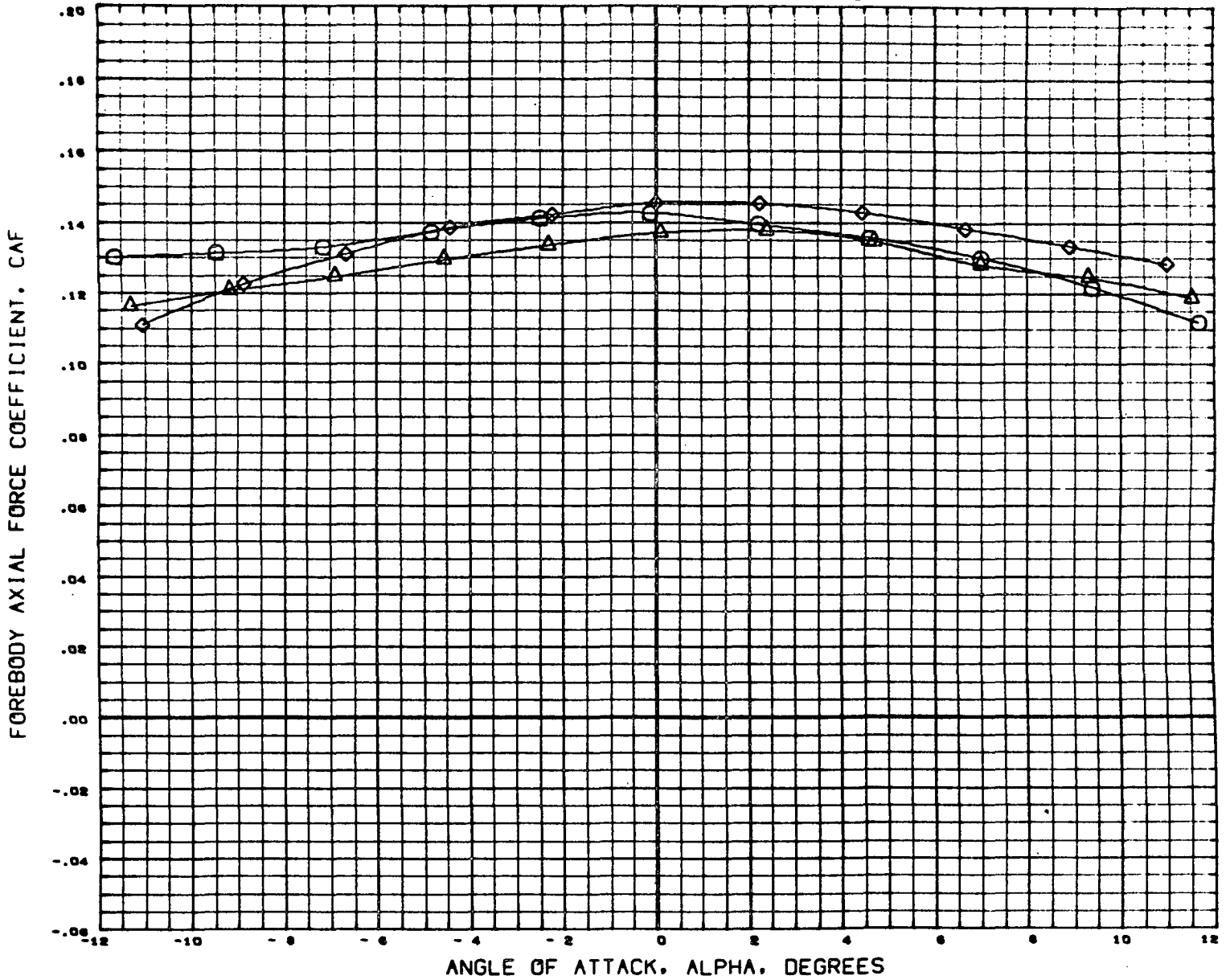


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	MSFC490 NR/GD LAUNCH B20C48W14V8+85W17V17	0.000	1.000	0.000	0.000	SREF	19.6560 SQ IN
(H3238A)	MSFC490 NR/GD LAUNCH B20C48W14V8+85W17V17	0.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH B20148W14V8+85W17V17	0.000	3.000	0.000	0.000	BREF	6.0980 INCHES
						XHRP	0.0000
						YHRP	0.0000
						ZHRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

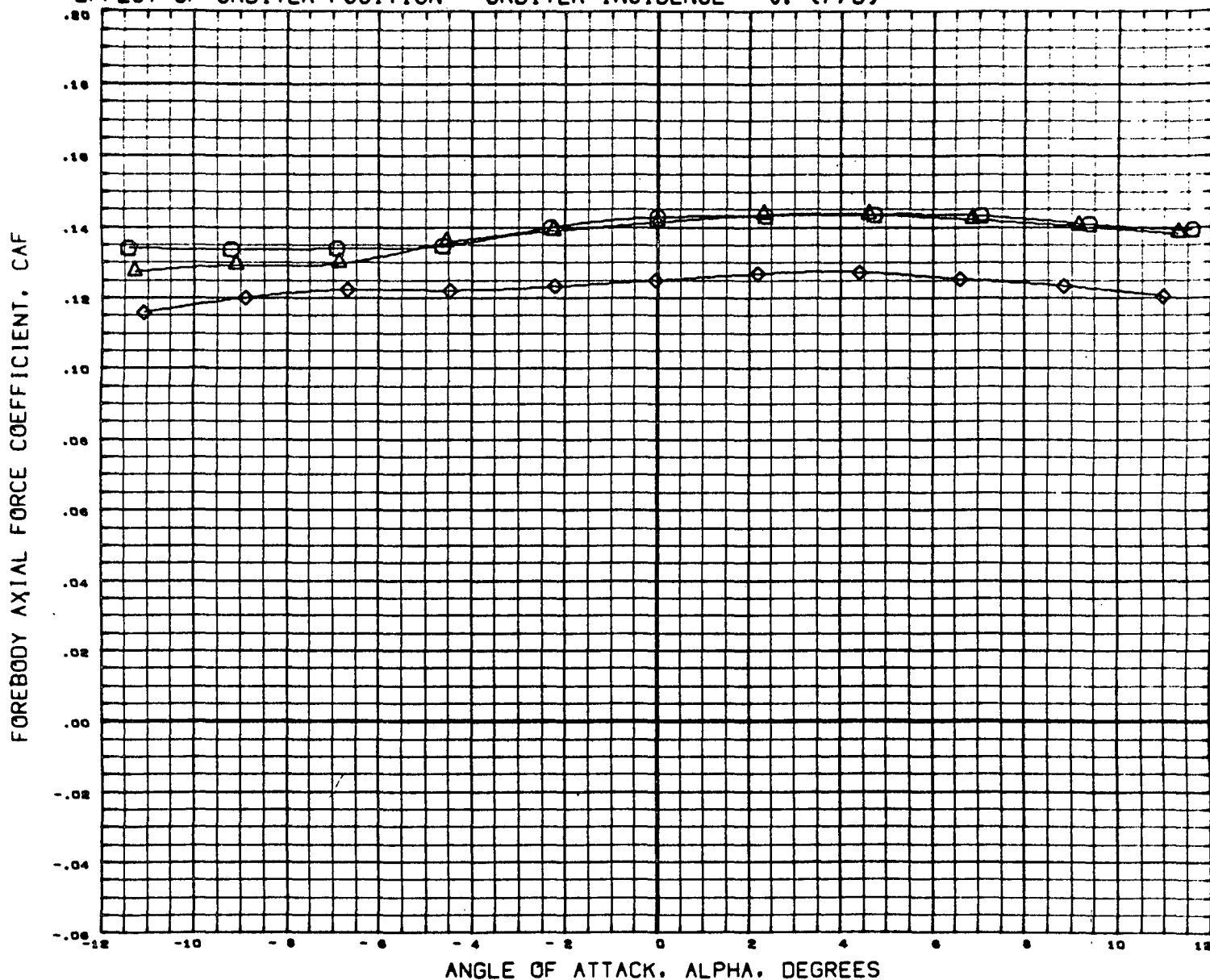


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH 1.09

PAGE 128

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

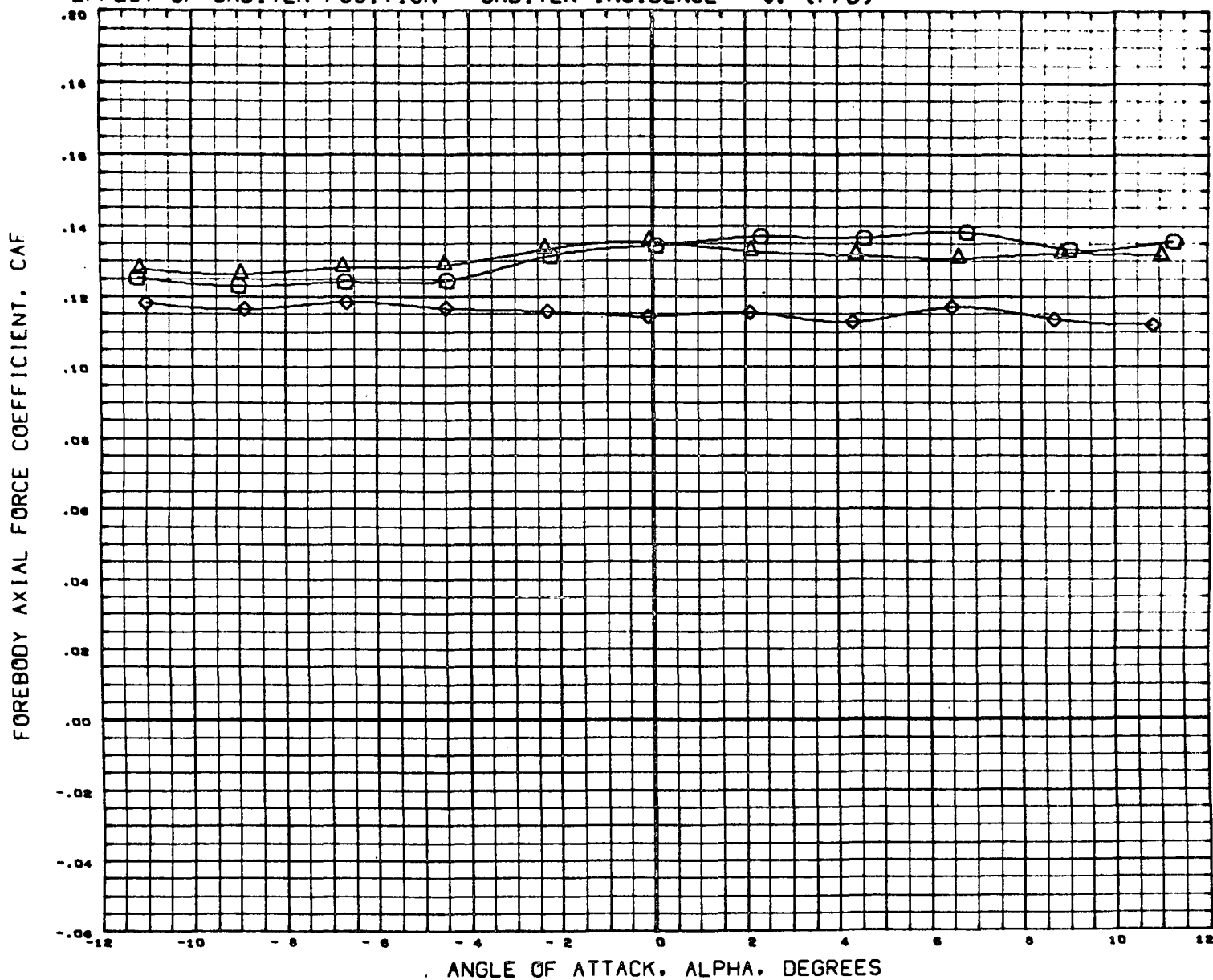


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V6+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

PAGE 129

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

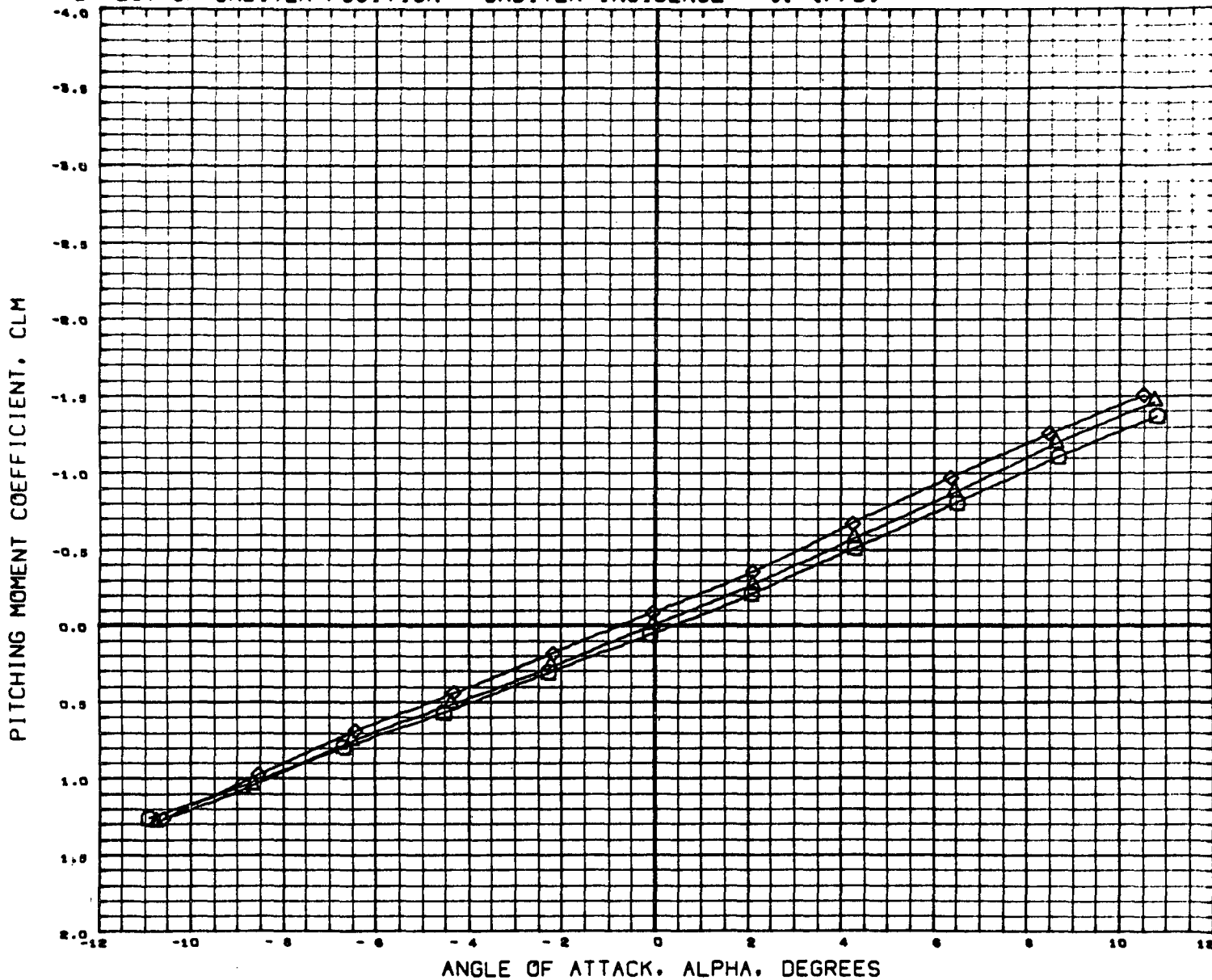


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	HSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	HSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3241A)	HSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0950 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

PAGE 130

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

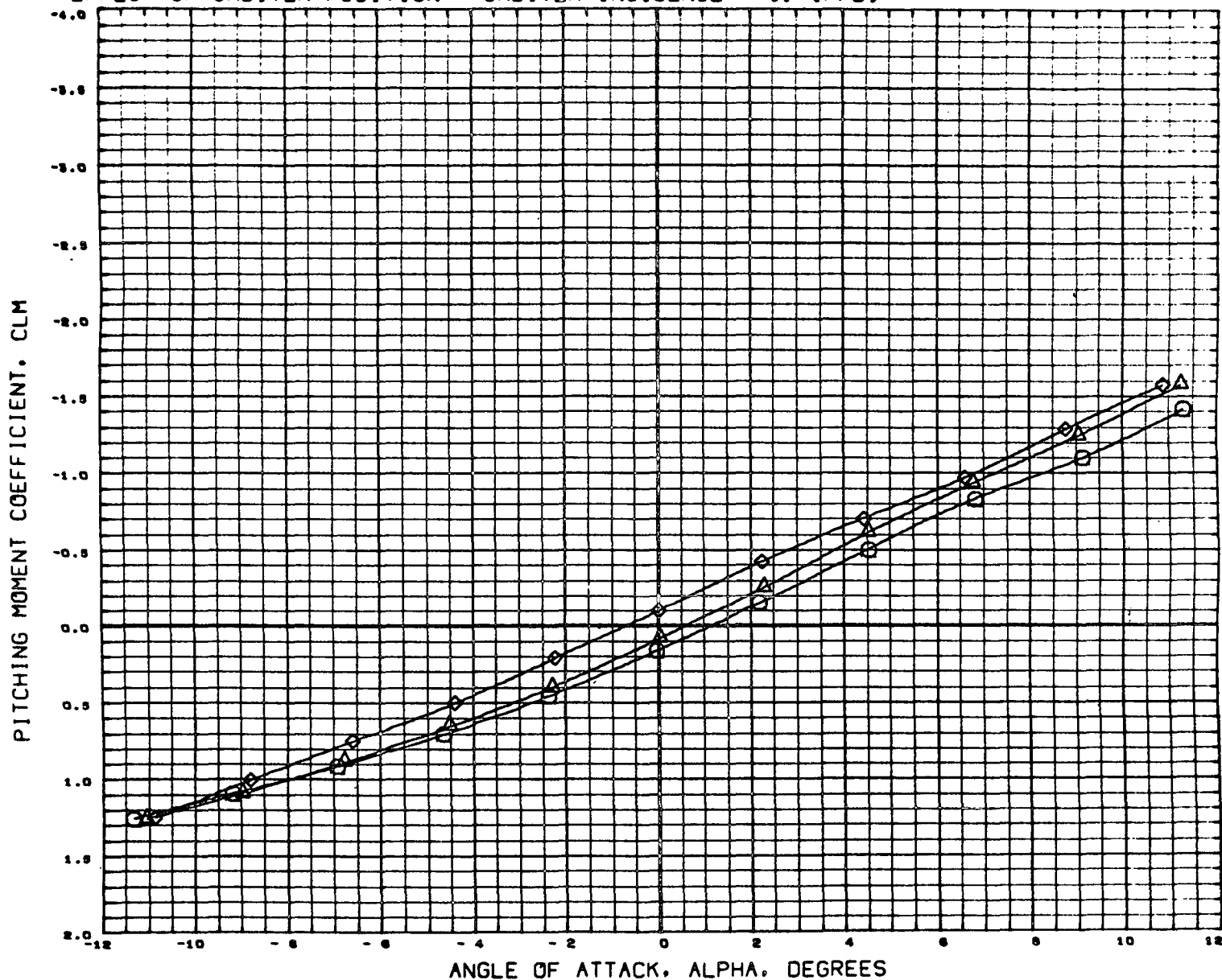


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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(N3236A)	MSFC490 NR/CD LAUNCH B20C4BW14V8+83W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(N3241A)	MSFC490 NR/CD LAUNCH B2014BW14V8+83W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

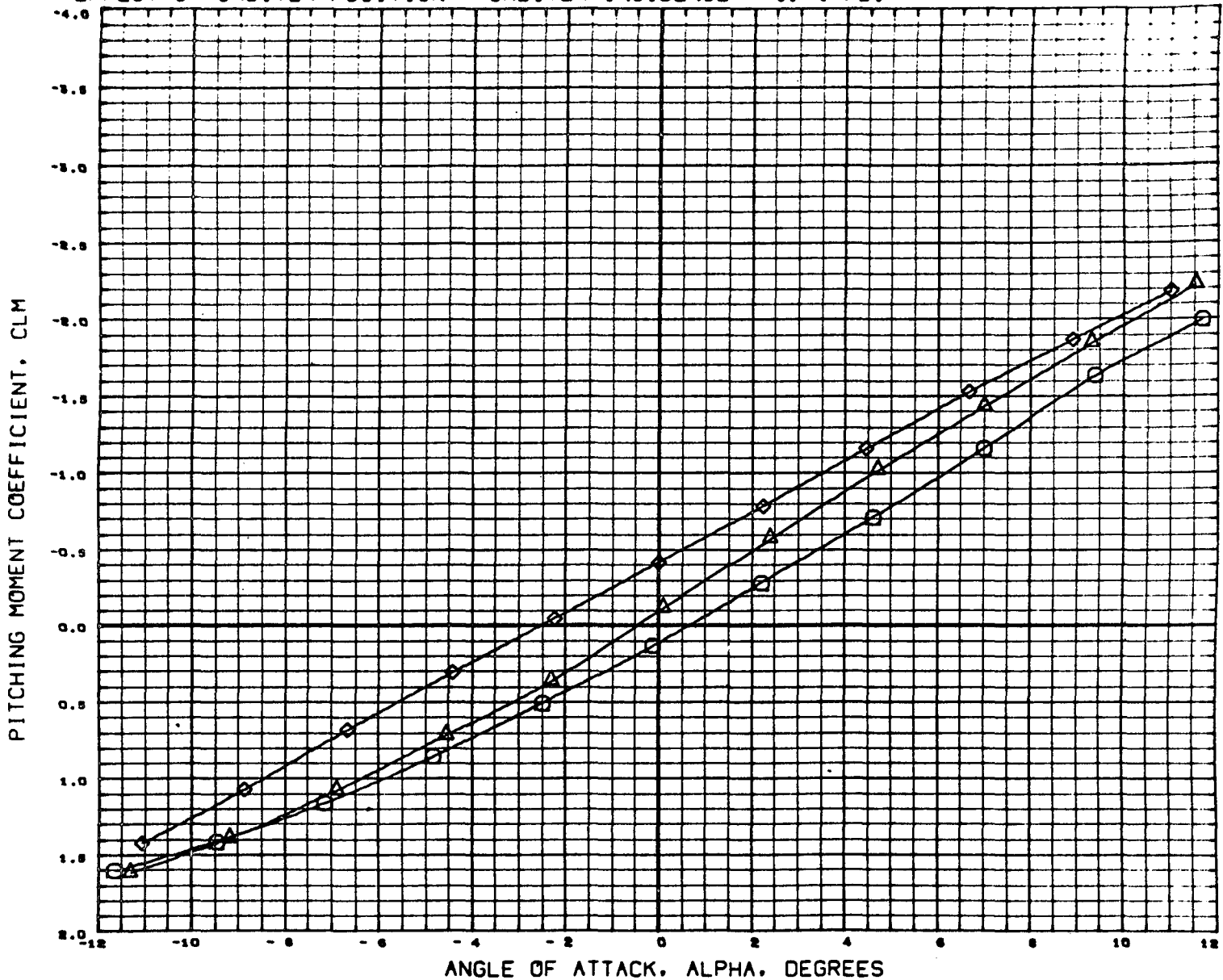


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	○	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 50 IN
(H3236A)	△	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(H3241A)	◇	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
							XMRP	0.0000
							YMRP	0.0000
							ZMRP	0.0000
							SCALE	0.0035 SCALE

MACH .90

PAGE 132

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

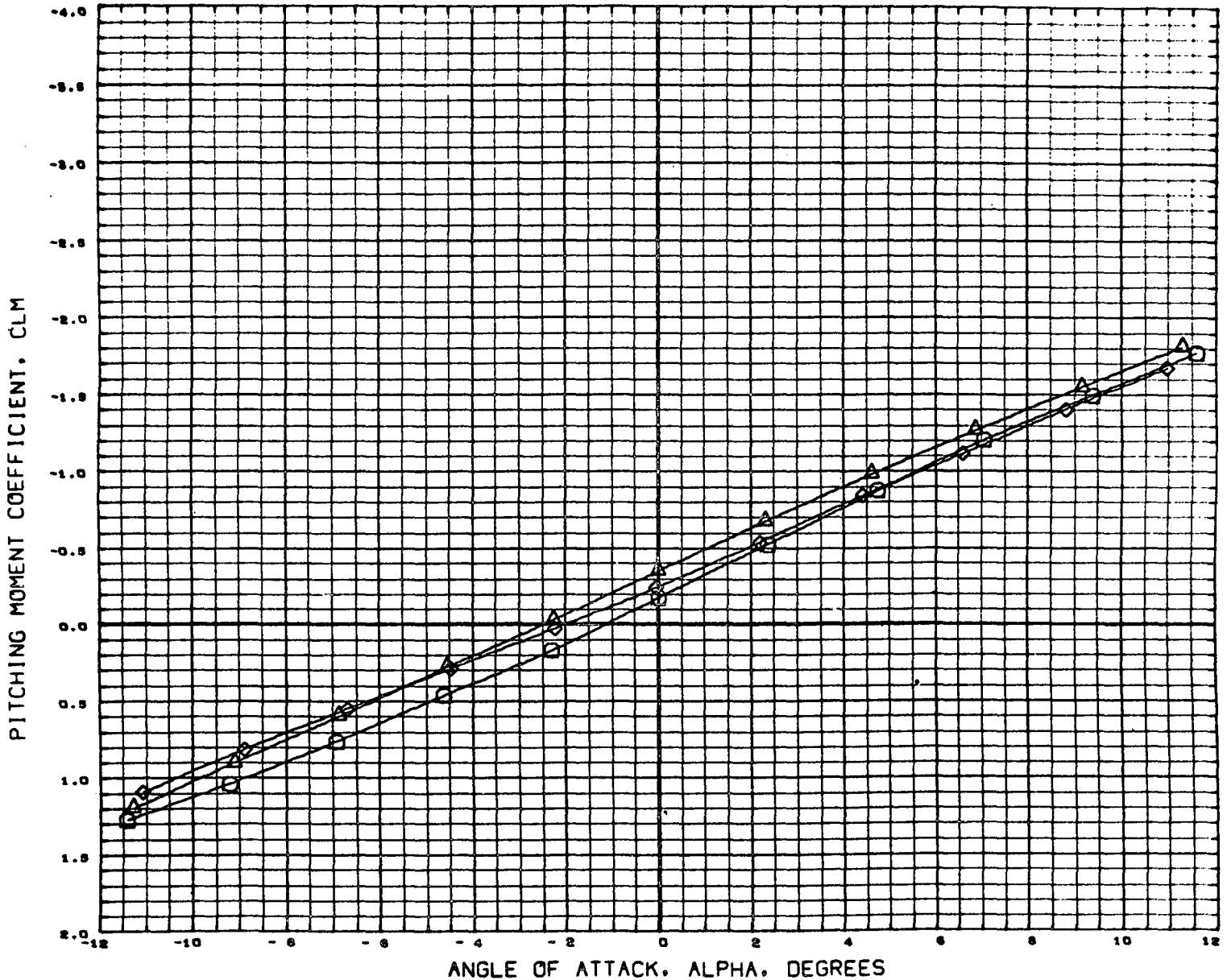


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(N3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(N3230A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(N3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+85W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH 1.09

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

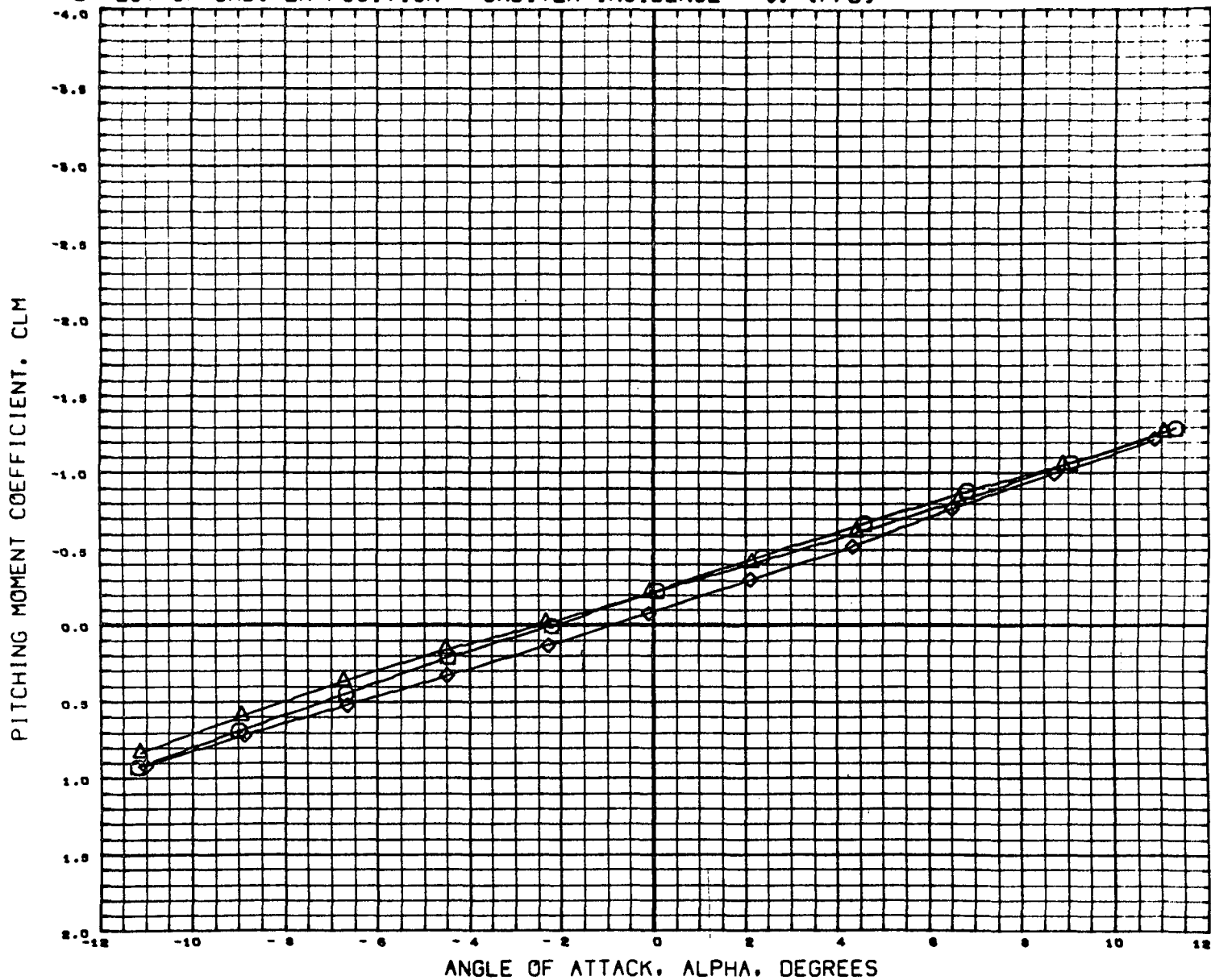


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(M3222A)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17	0.000	1.000	0.000	0.000	SREF	15.6560	59 IN
(M3236A)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17	0.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(M3241A)	MSFC490 NR/GD LAUNCH 820148W14V8+85W17V17	0.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XHRP	0.0000	
						YHRP	0.0000	
						ZHRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.46

PAGE 134

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

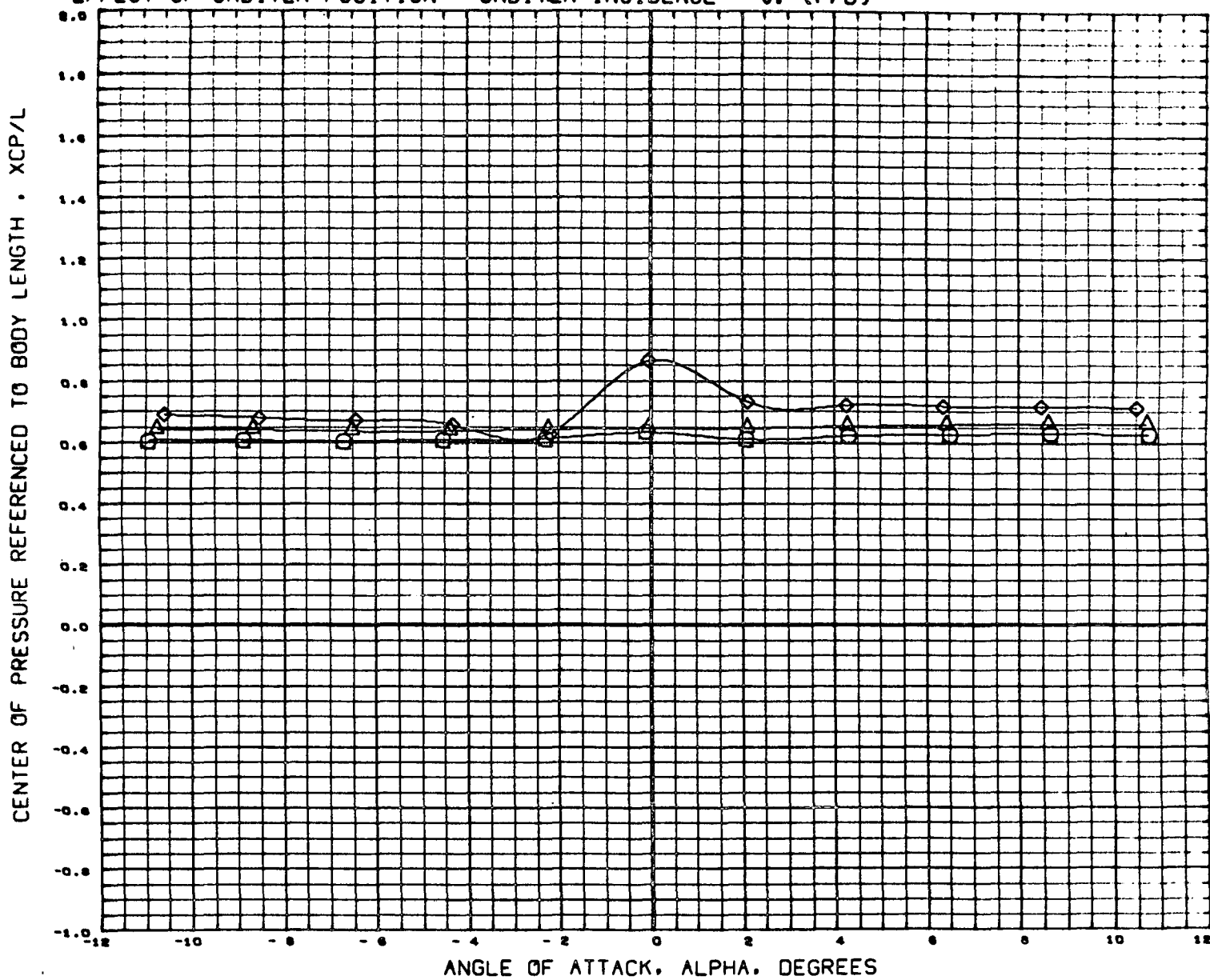


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+BSW17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+BSW17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V6+BSW17V17	0.000	3.000	0.000	0.000	SREF	0.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

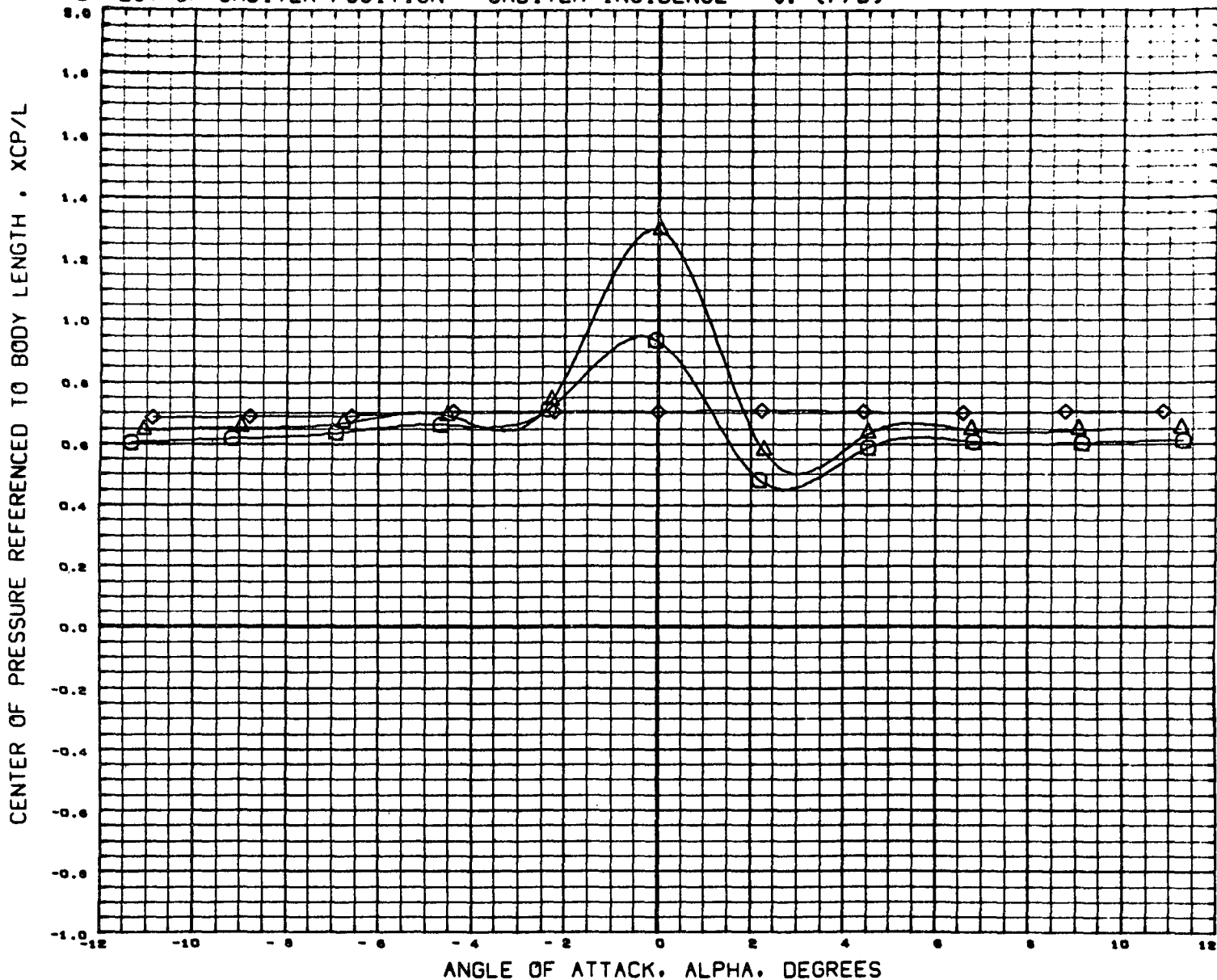


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3236A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	0.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH 82014BW14V8+85W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

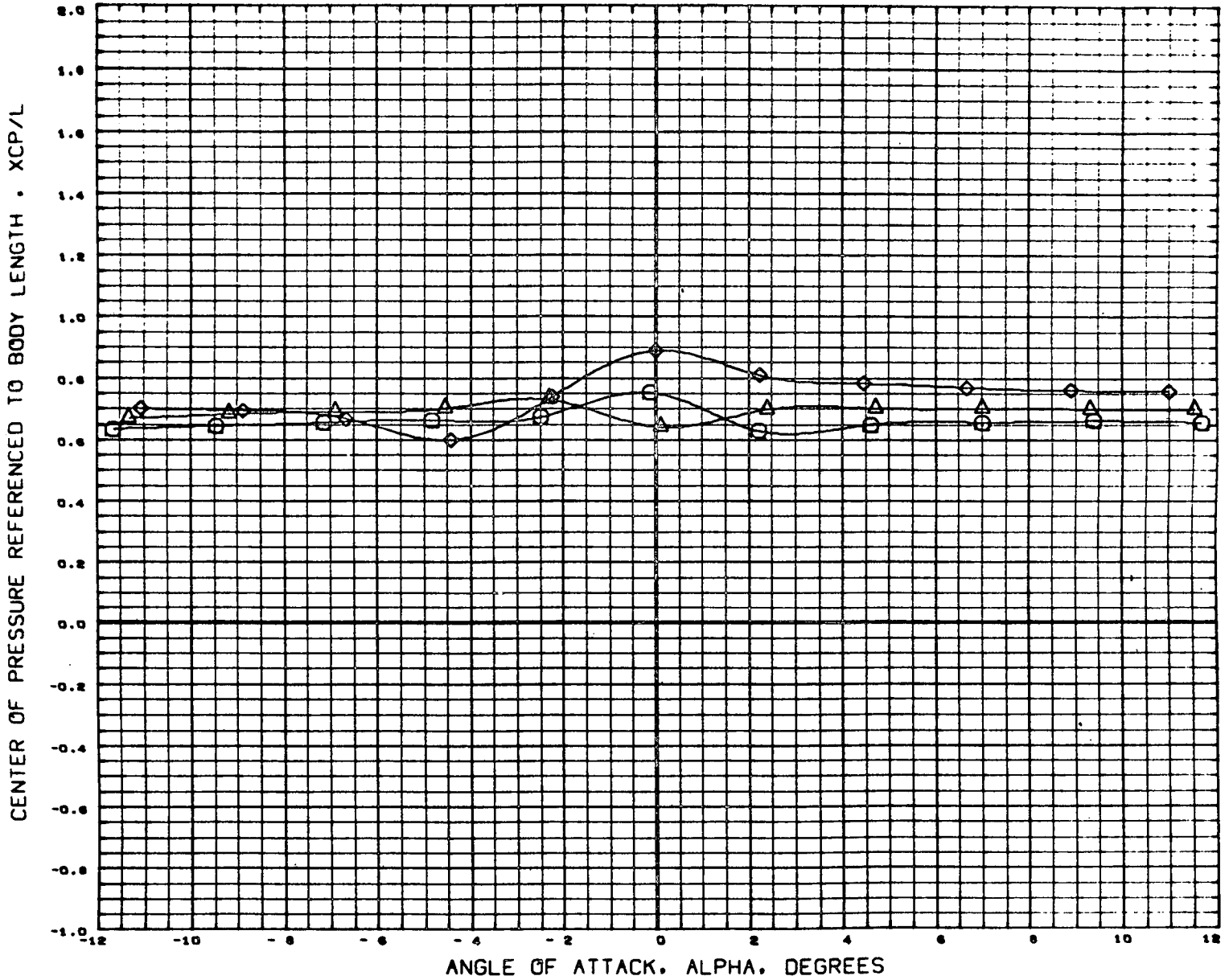


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(N3222A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	0.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(N3236A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	0.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(N3241A)	MSFC490 NR/GD LAUNCH B20148W14V8+B3W17V17	0.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)



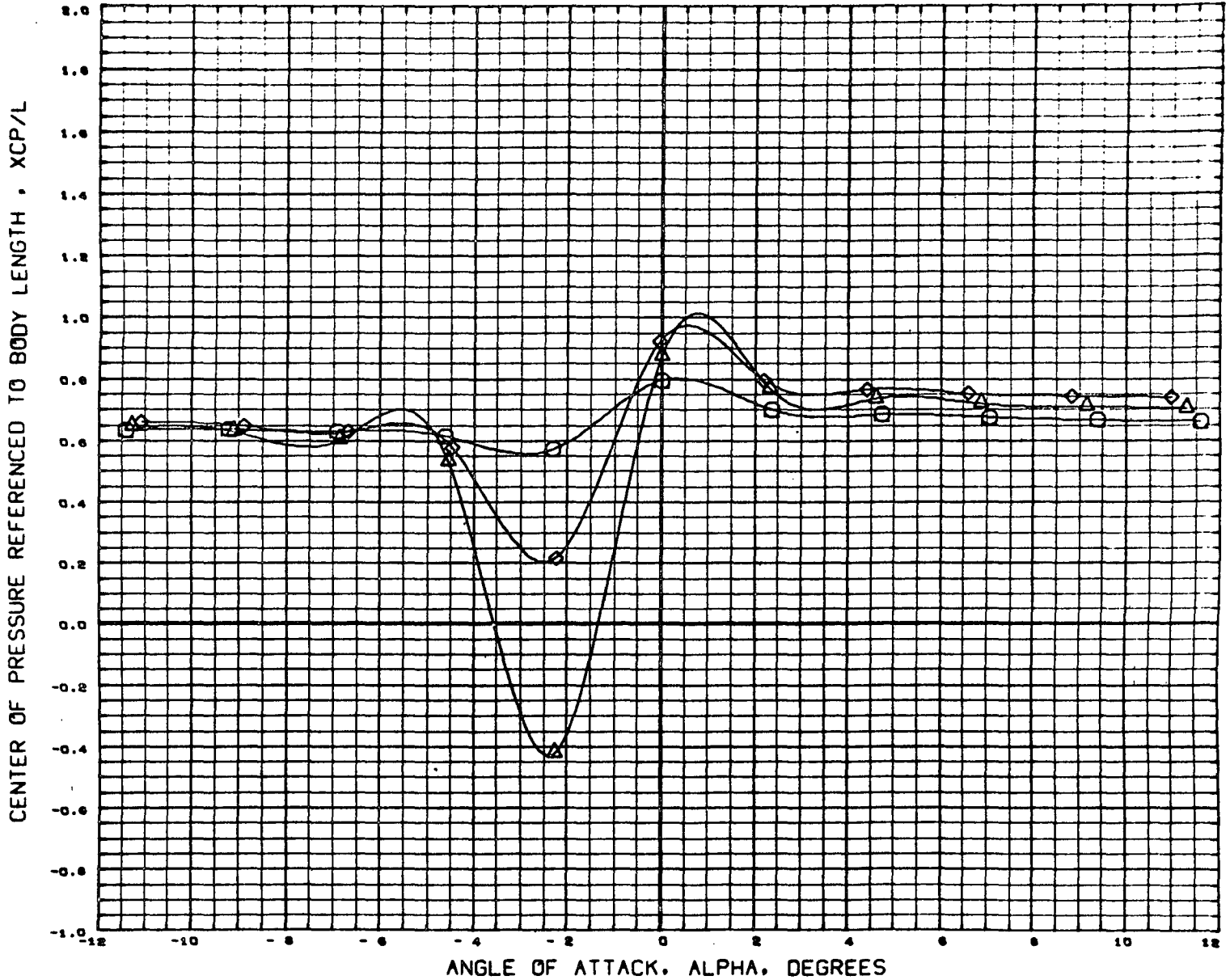
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 30 IN
(H3238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH

1.09

PAGE 138

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

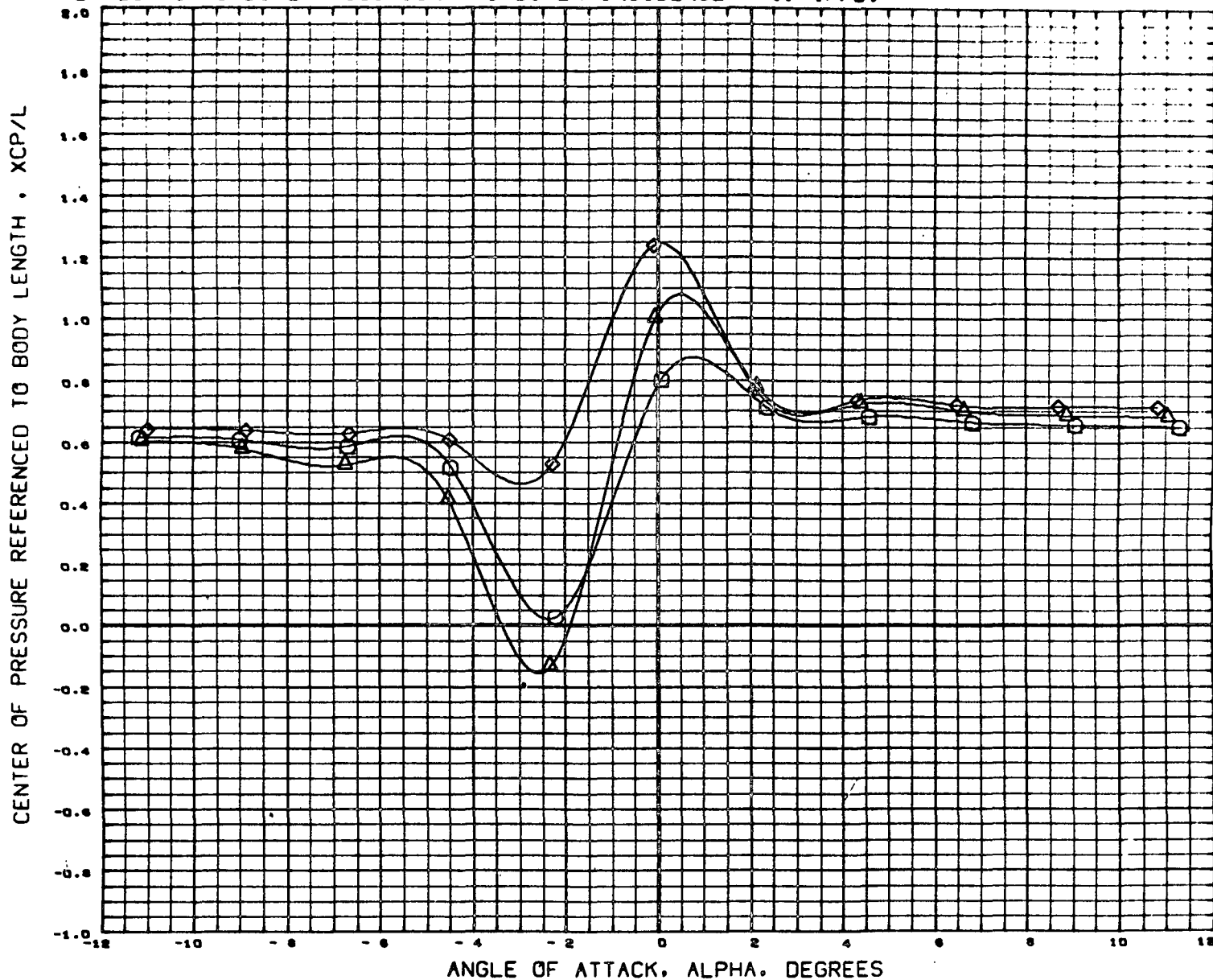


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	13.6560 SQ IN
(H3238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0039 SCALE

MACH 1.46

PAGE 139

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

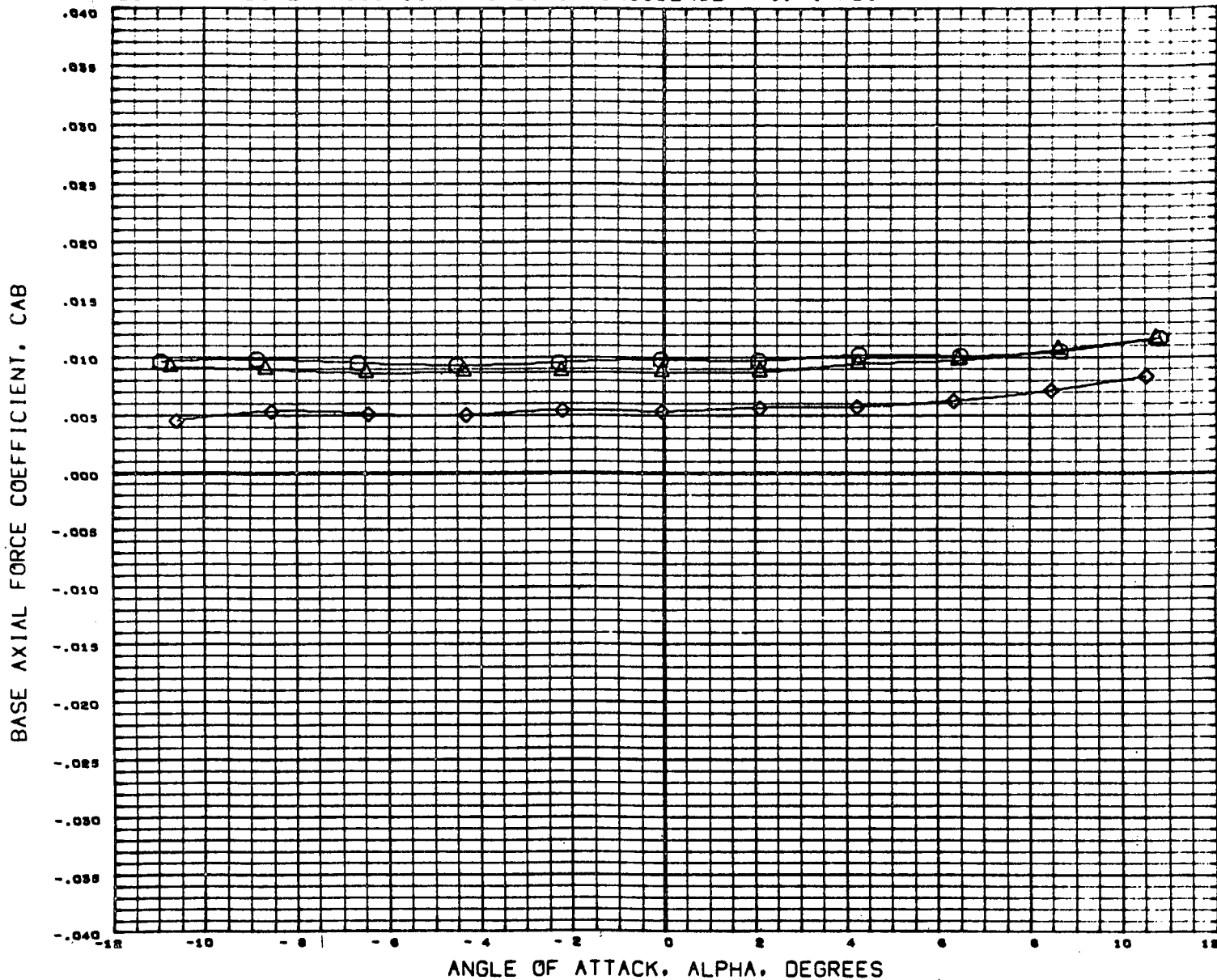


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(N3222A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	19.6560	30 IN
(N3238A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0930	INCHES
(N3241A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.96

PAGE 140

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

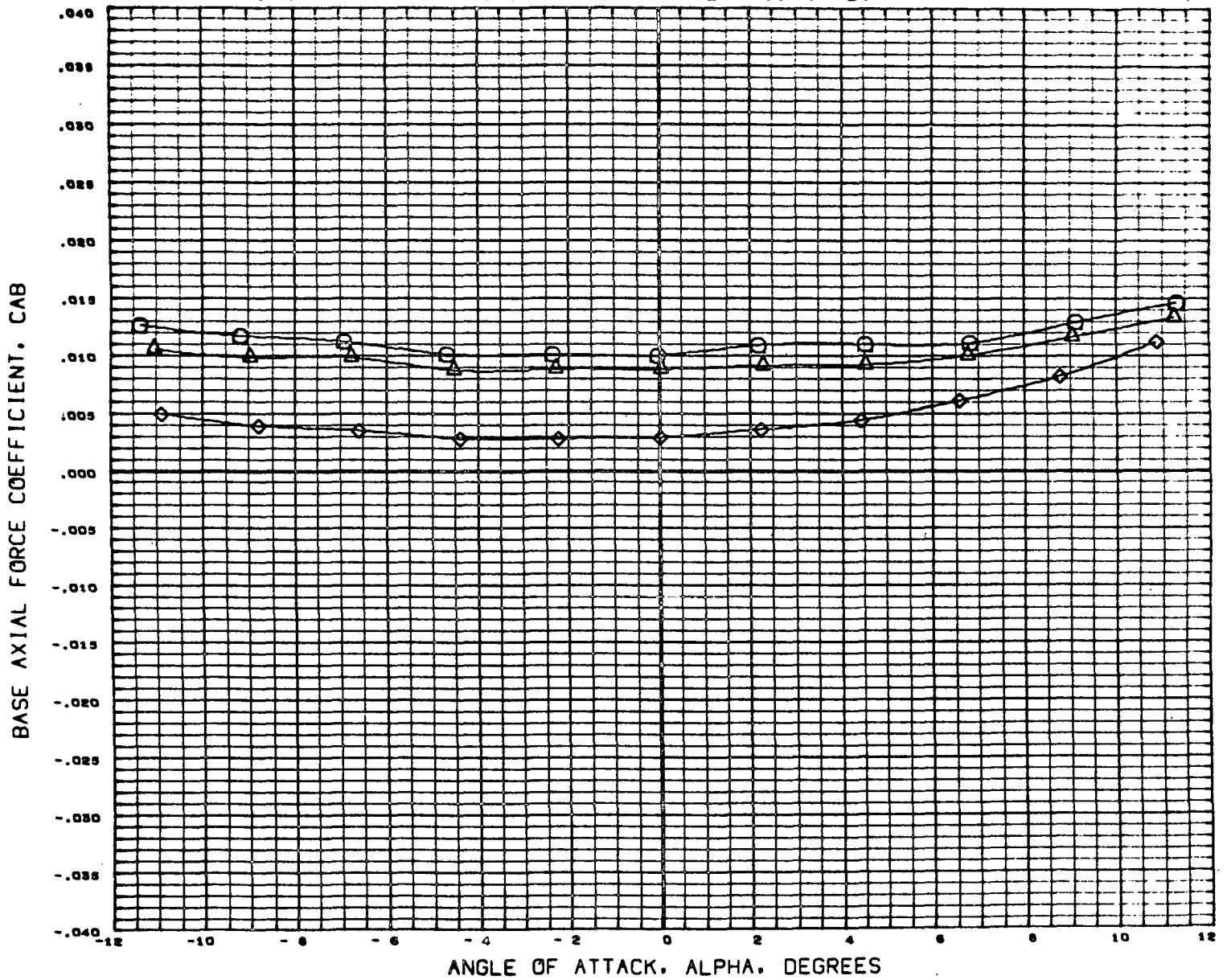


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	1.000	0.000	0.000	SREF	15.8560 SQ IN
(H3238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

PAGE 141

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

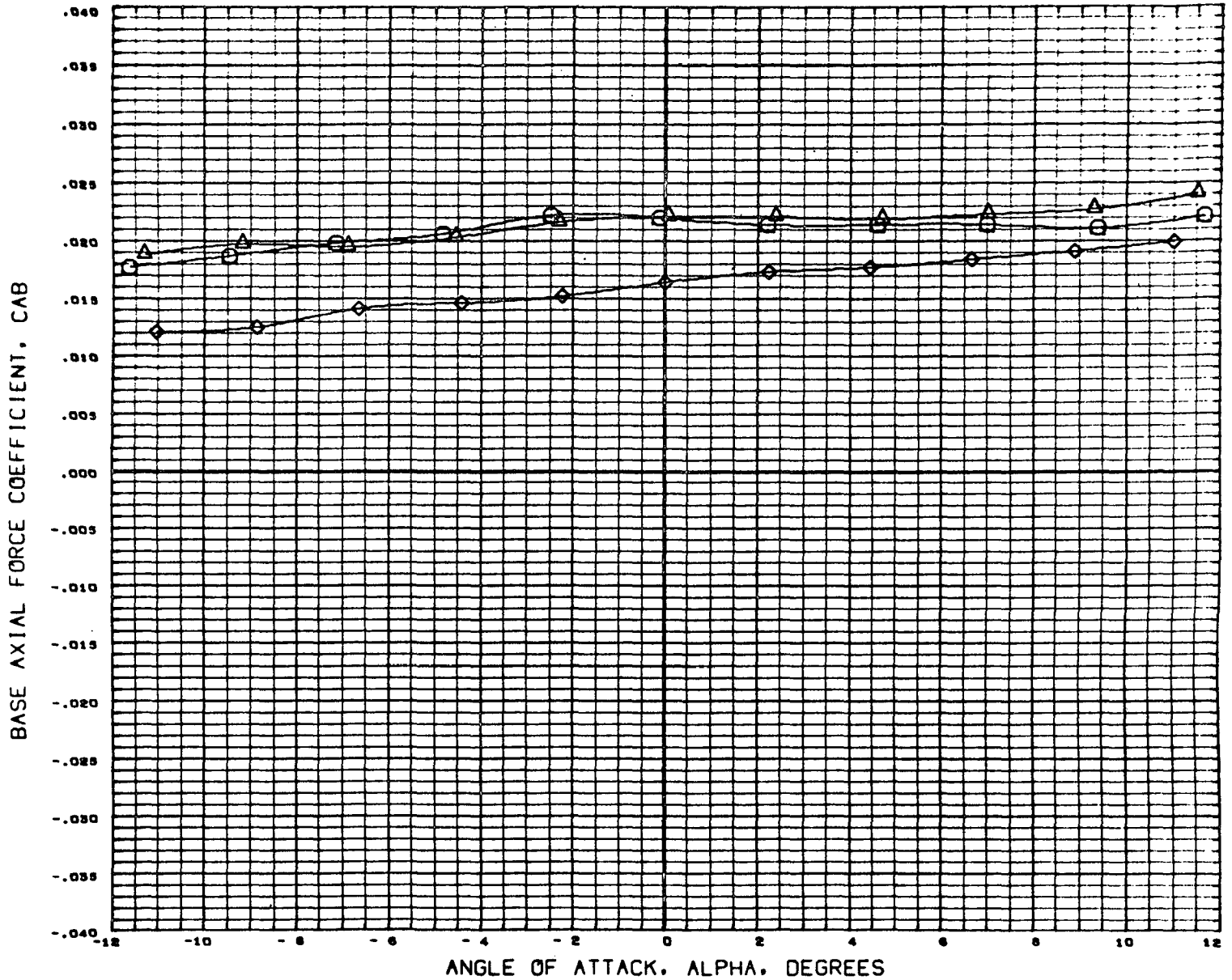


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(N3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	0.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(N3238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	0.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(N3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+85W17V17	0.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .90

PAGE 142

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)



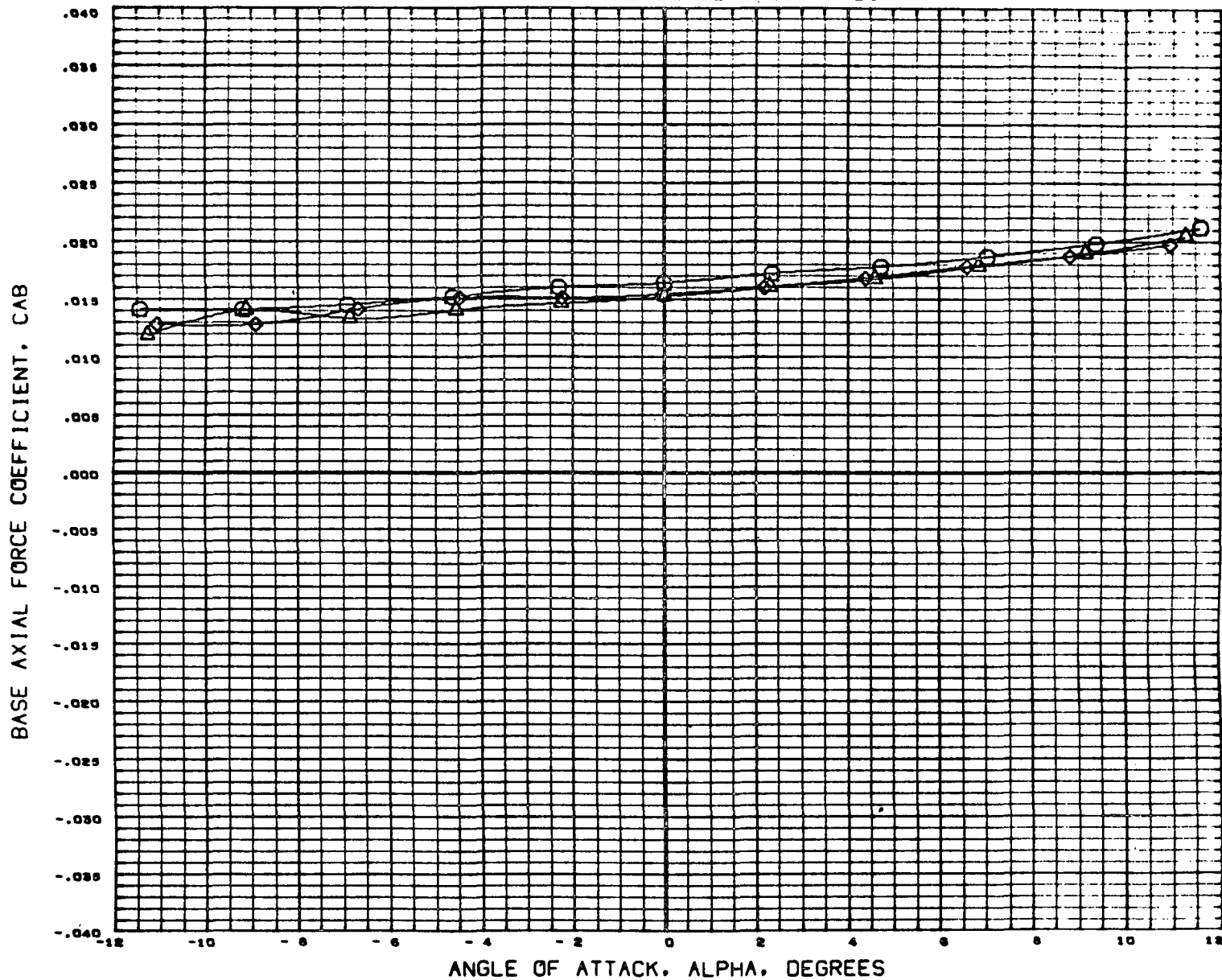
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3222A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3238A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3241A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH

1.09

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

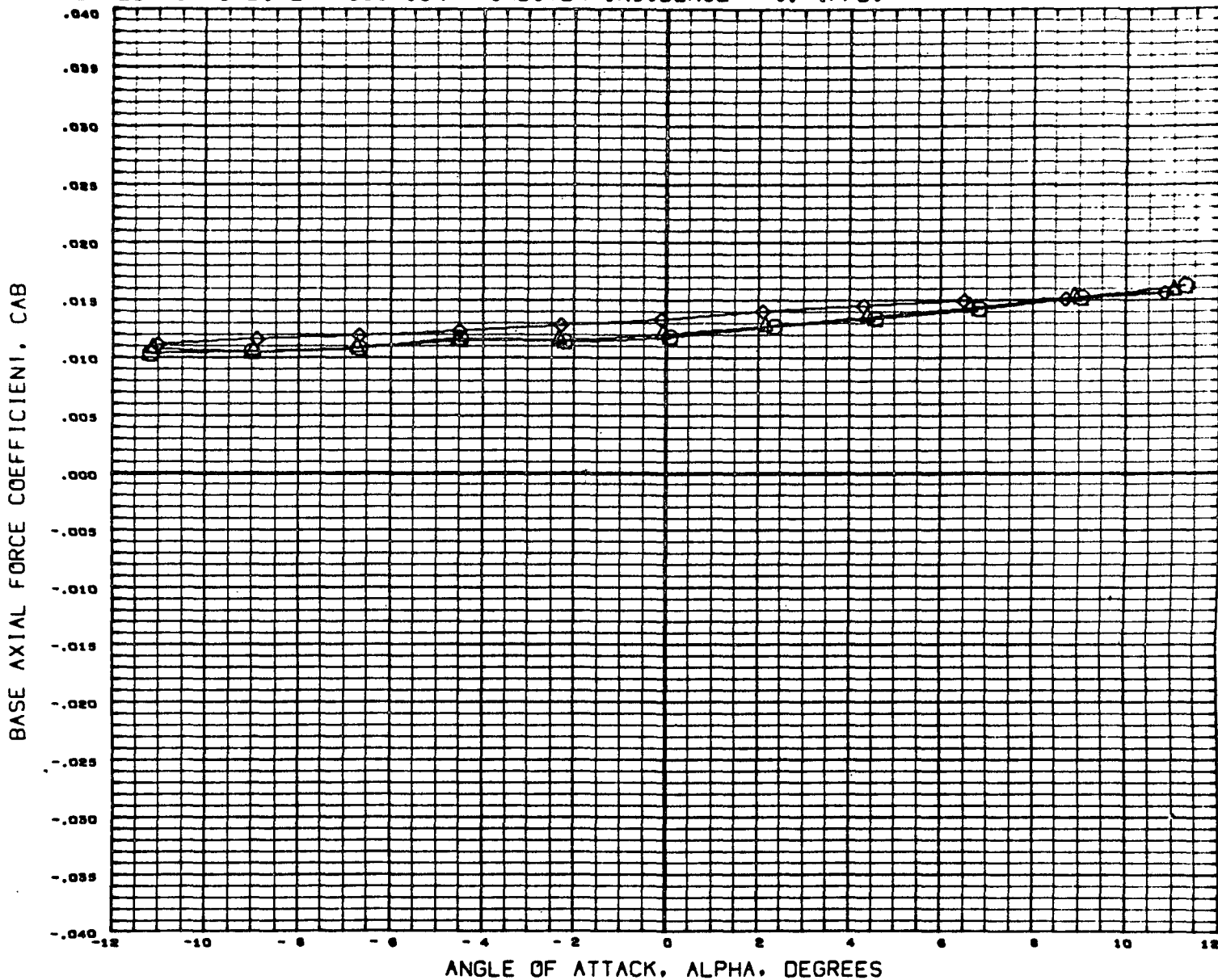


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(N3222A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 30 IN
(N3238A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(N3241A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(N3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(N3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(N3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

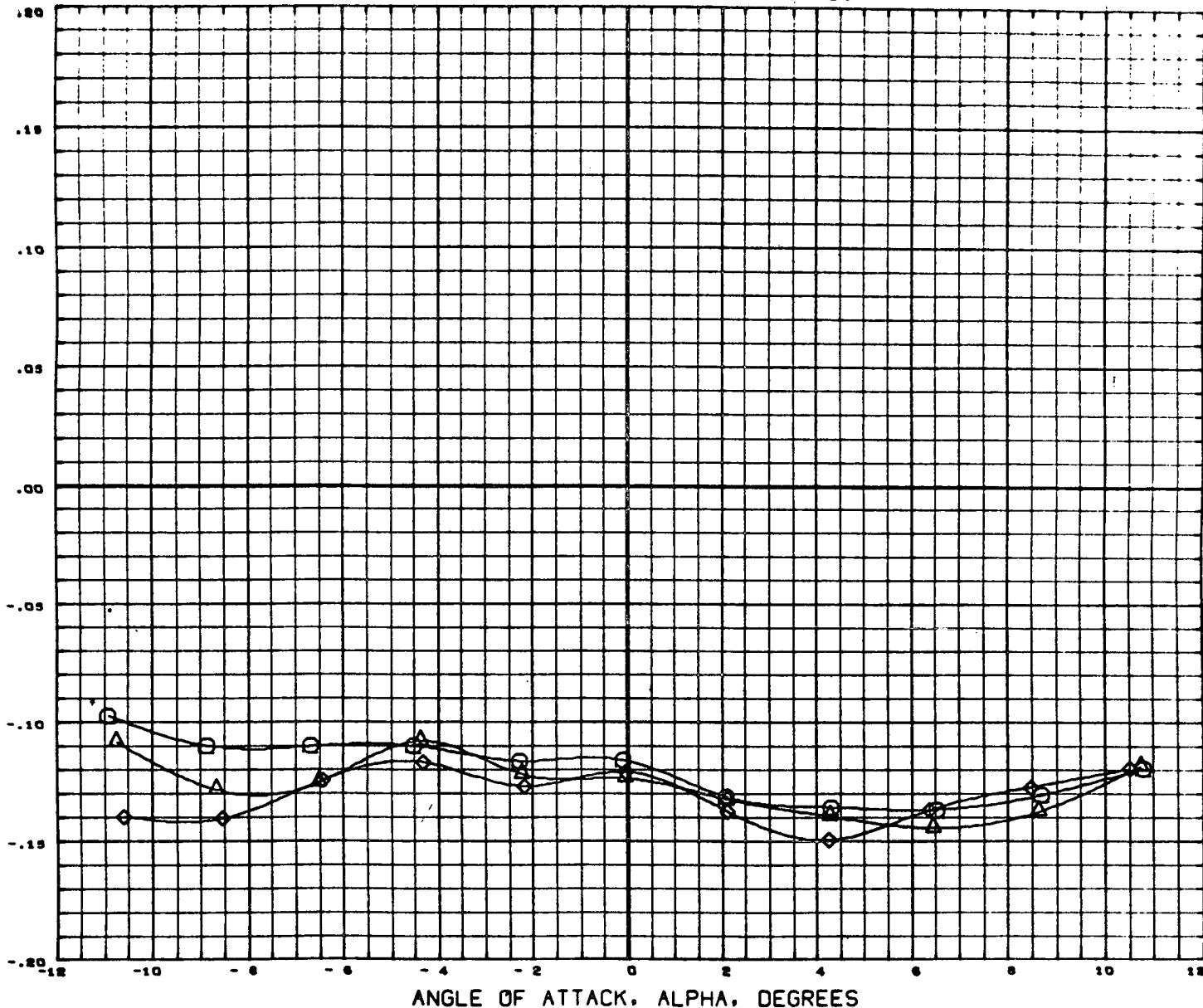
MACH 1.96

PAGE 145

C3

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE

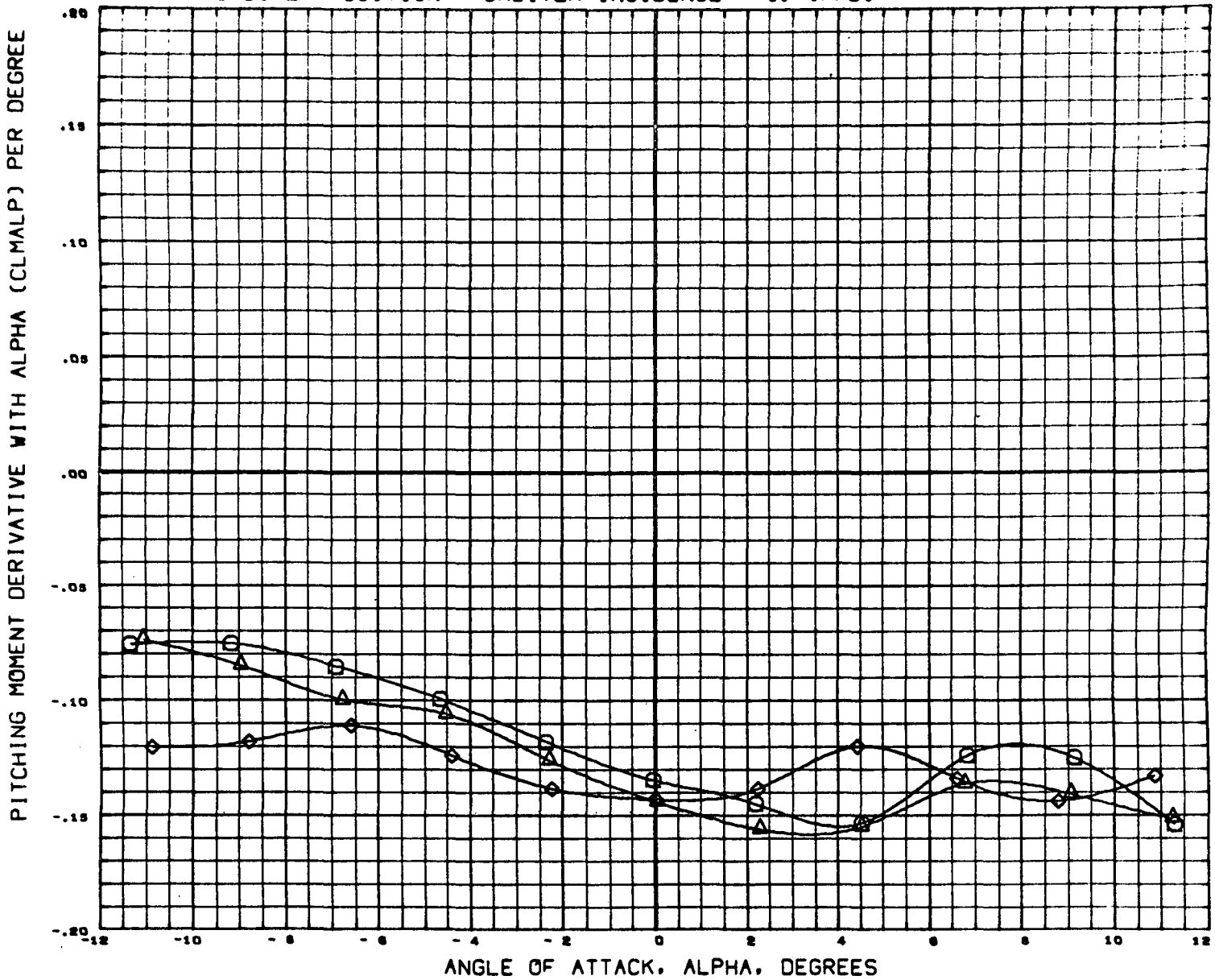


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(13230A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .60

PAGE 146

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

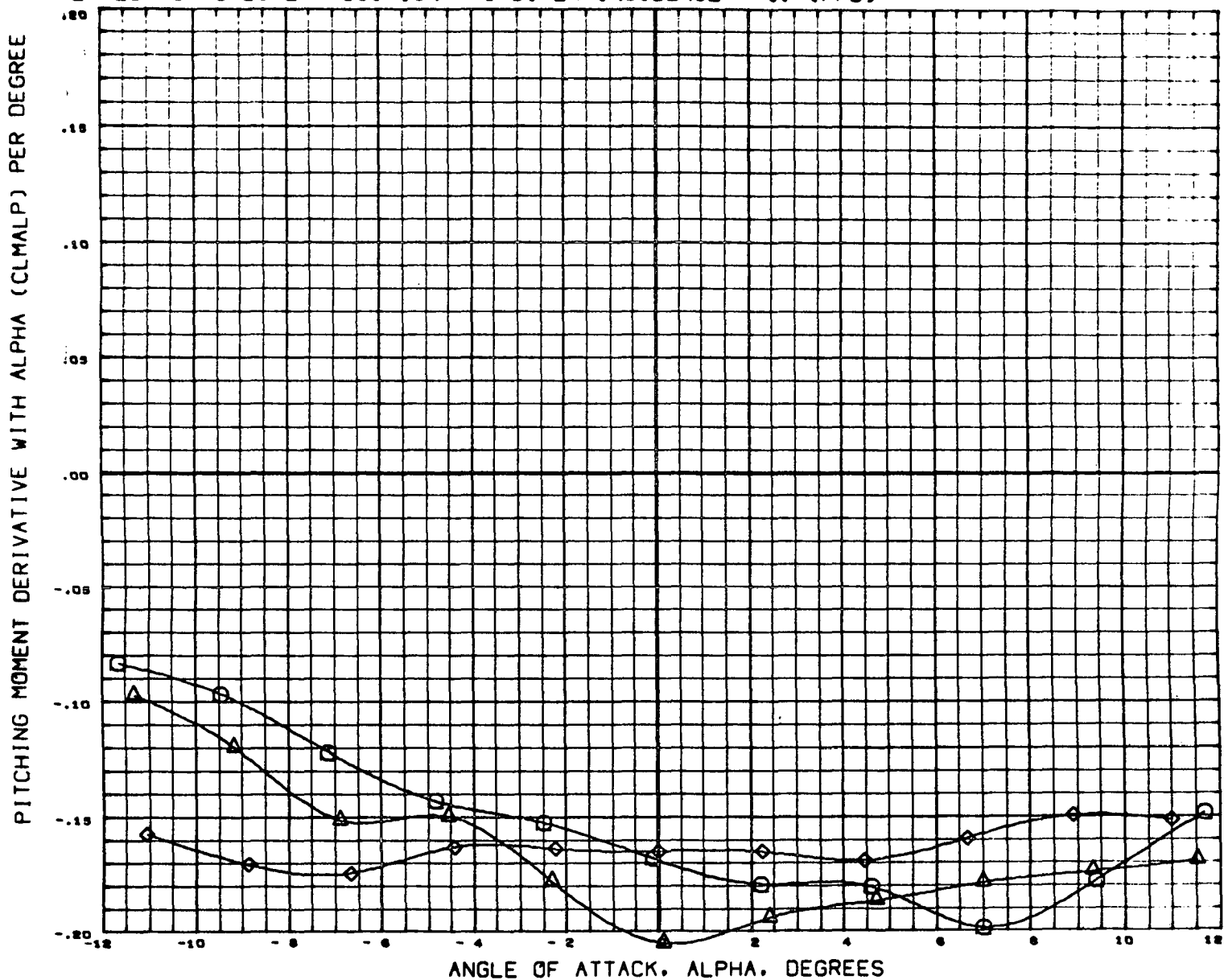


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(03222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6360 SQ IN
(13236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)



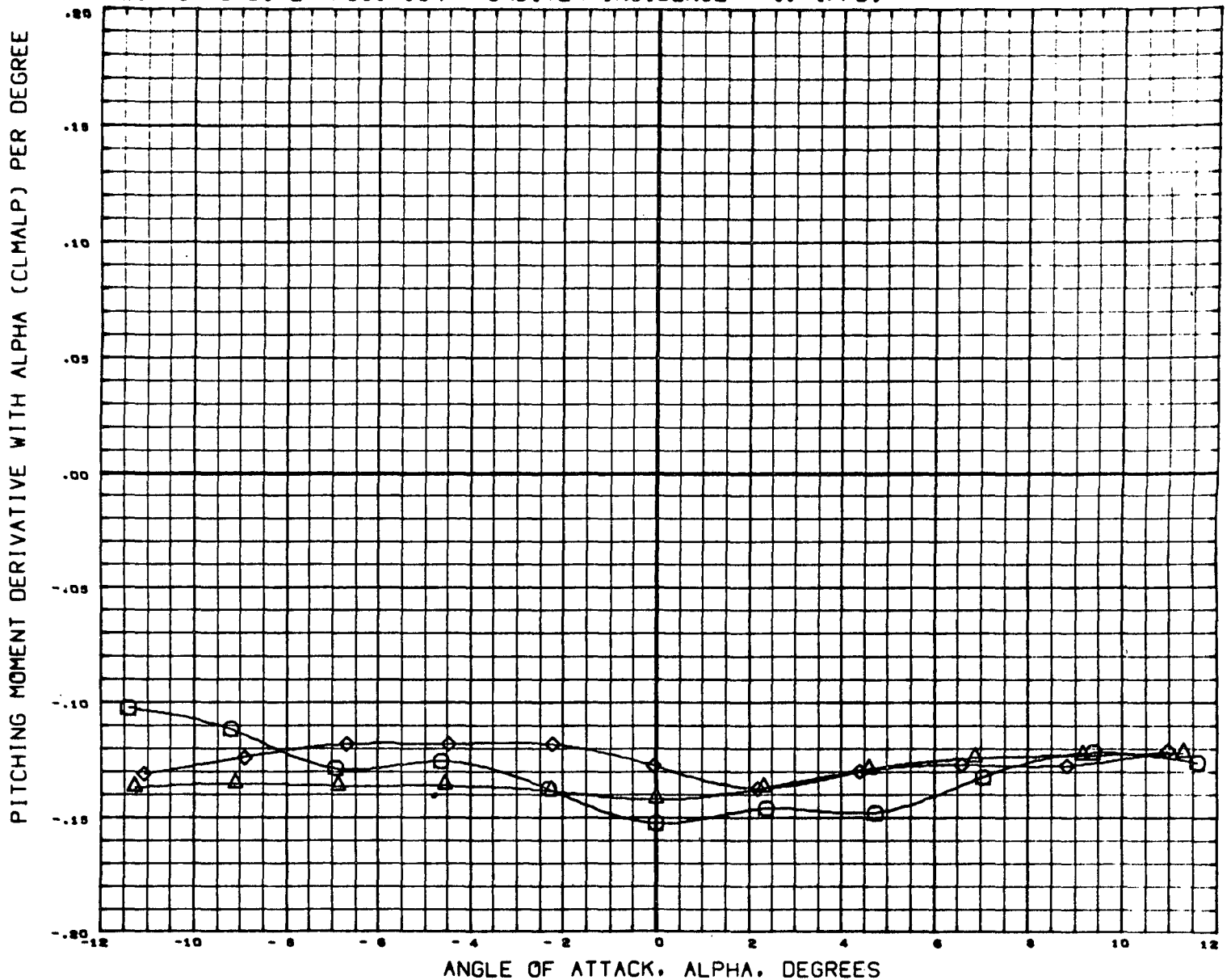
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	13.6560 SQ IN
(13230A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH

1.09

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)



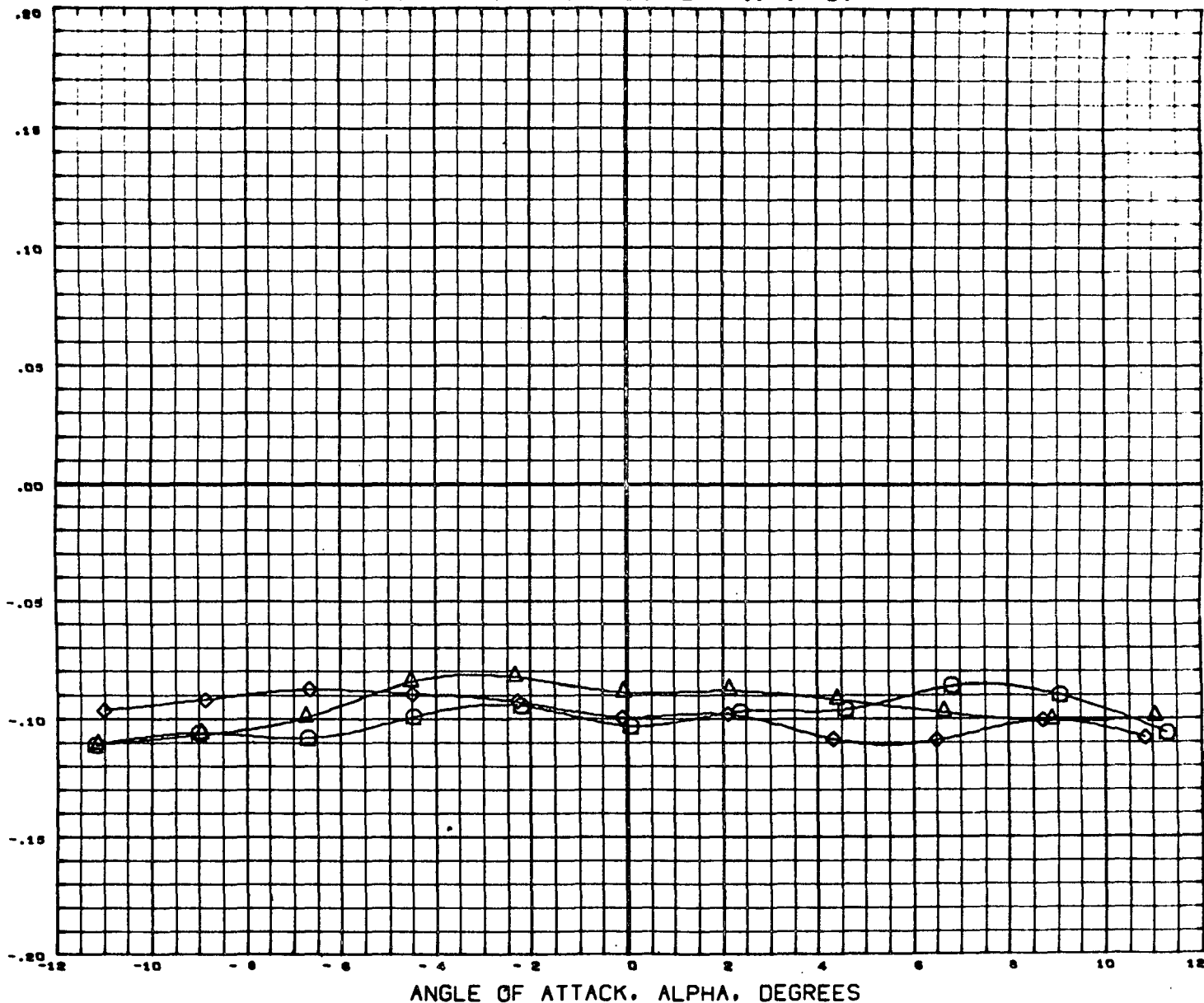
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(03222A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.8560	50 IN
(13238A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(13241A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.46

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



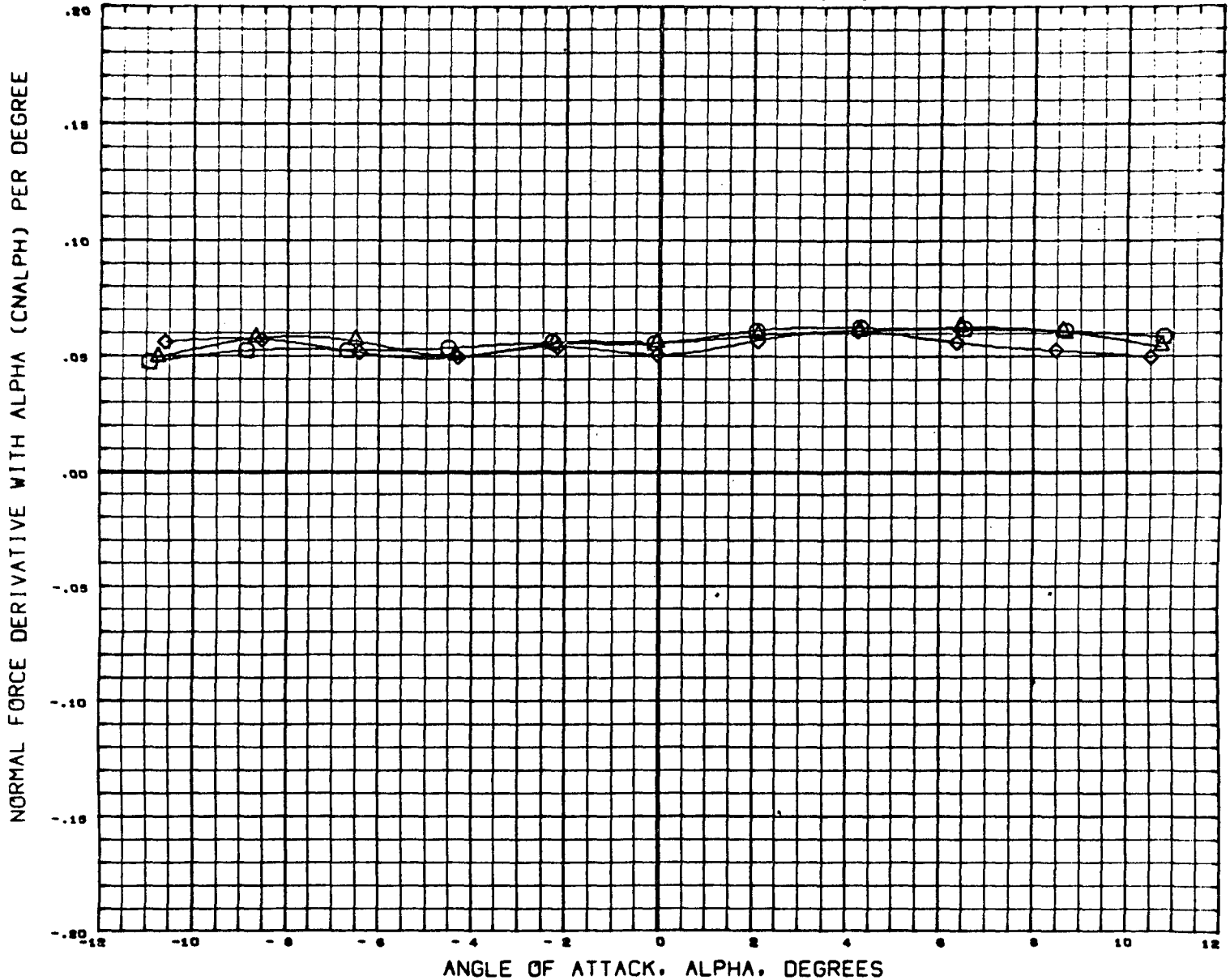
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(03222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560	SQ IN
(13238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0990	INCHES
(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0033	SCALE

MACH

1.96

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

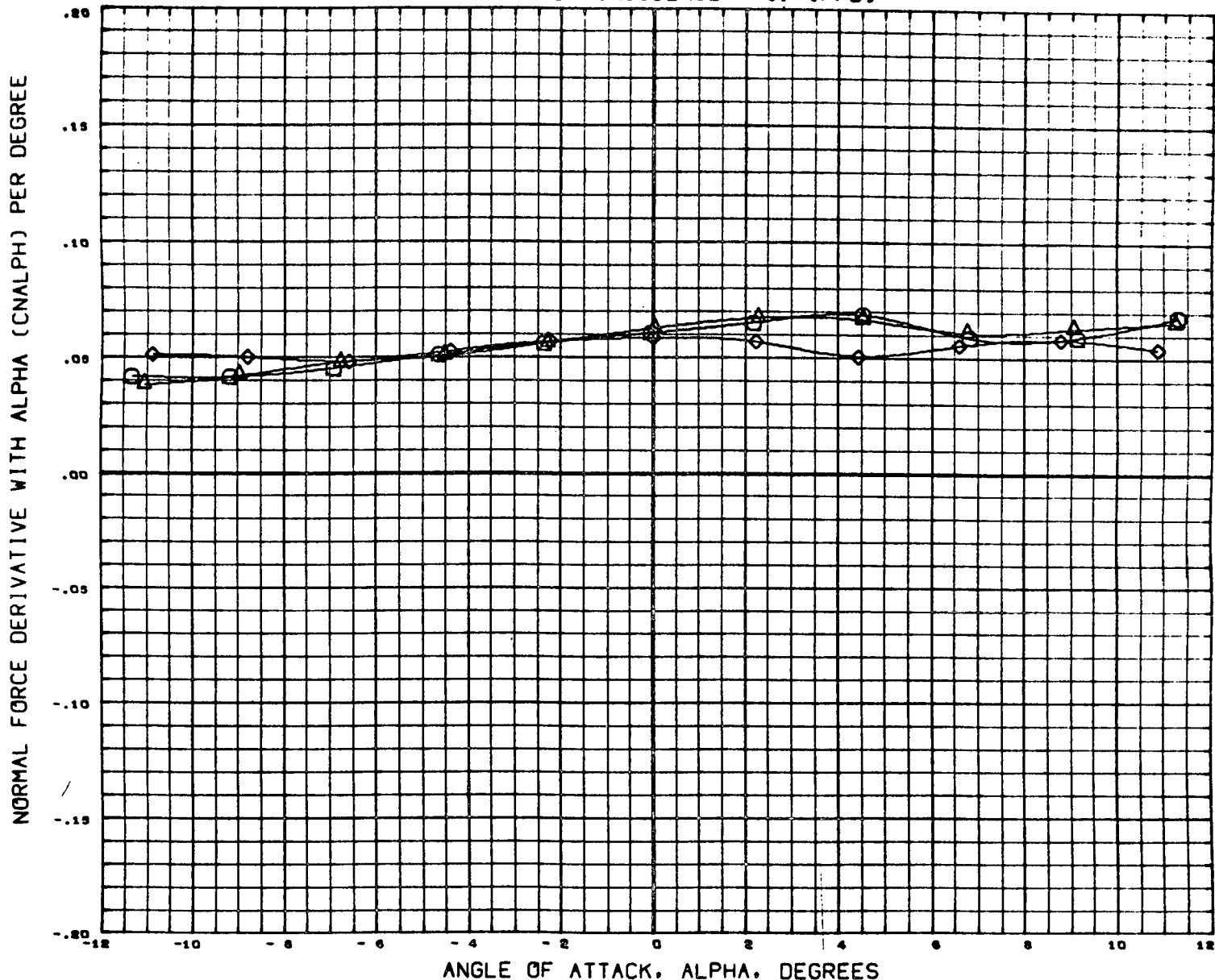


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(03222A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13236A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V6+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XNRP	0.0000
						YNRP	0.0000
						ZNRP	0.0000
						SCALE	0.0033 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

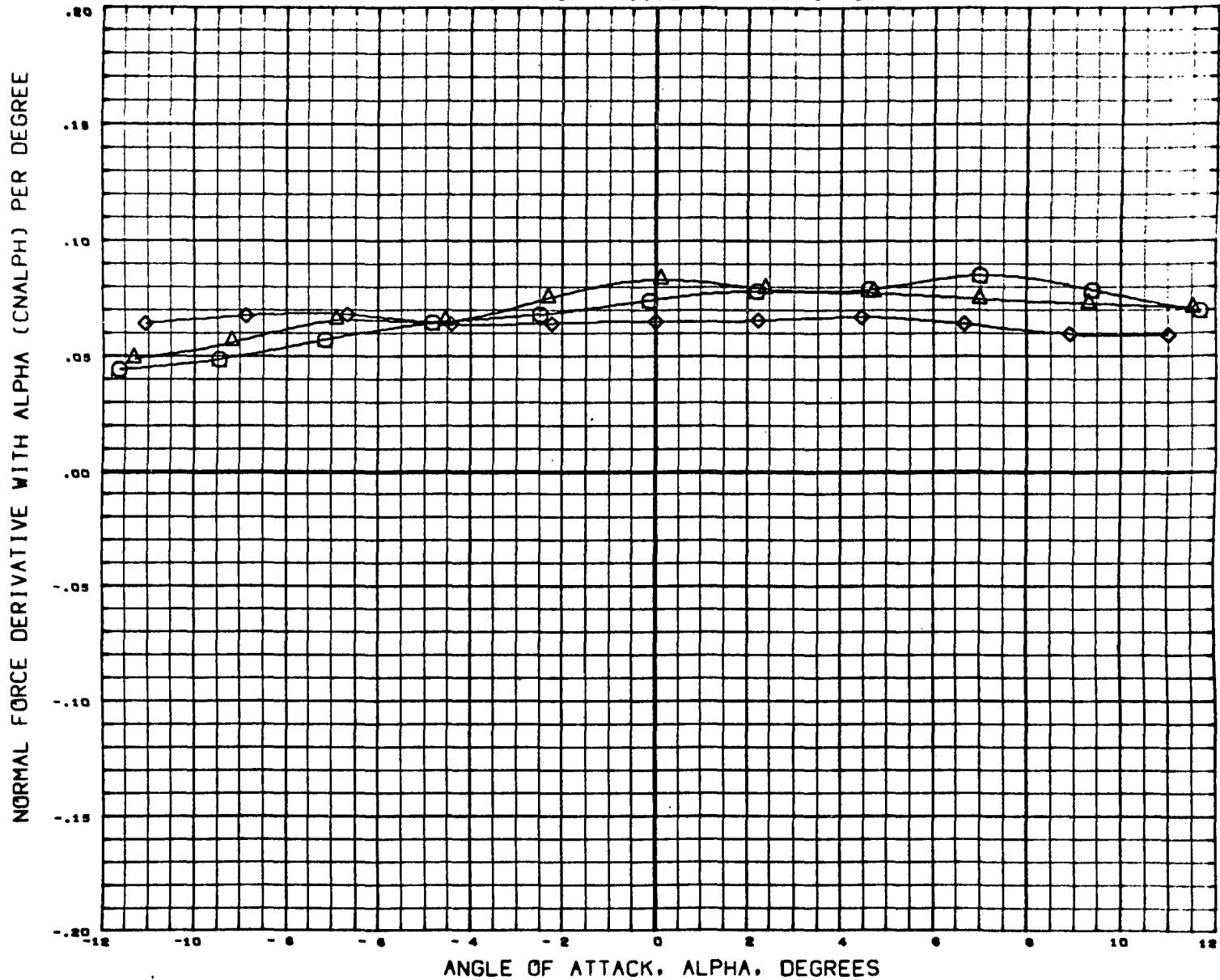


DATA SET SYMBOL	SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(03222A)	○	MSFC490 NR/GD LAUNCH B20C4BW14V8+83W17V17	0.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(13238A)	△	MSFC490 NR/GD LAUNCH B20C4BW14V8+83W17V17	0.000	2.000	0.000	0.000	LREF	3.0930	INCHES
(13241A)	◇	MSFC490 NR/GD LAUNCH B2014BW14V8+83W17V17	0.000	3.000	0.000	0.000	BREF	6.0990	INCHES
							XMRP	0.0000	
							YMRP	0.0000	
							ZMRP	0.0000	
							SCALE	0.0035	SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

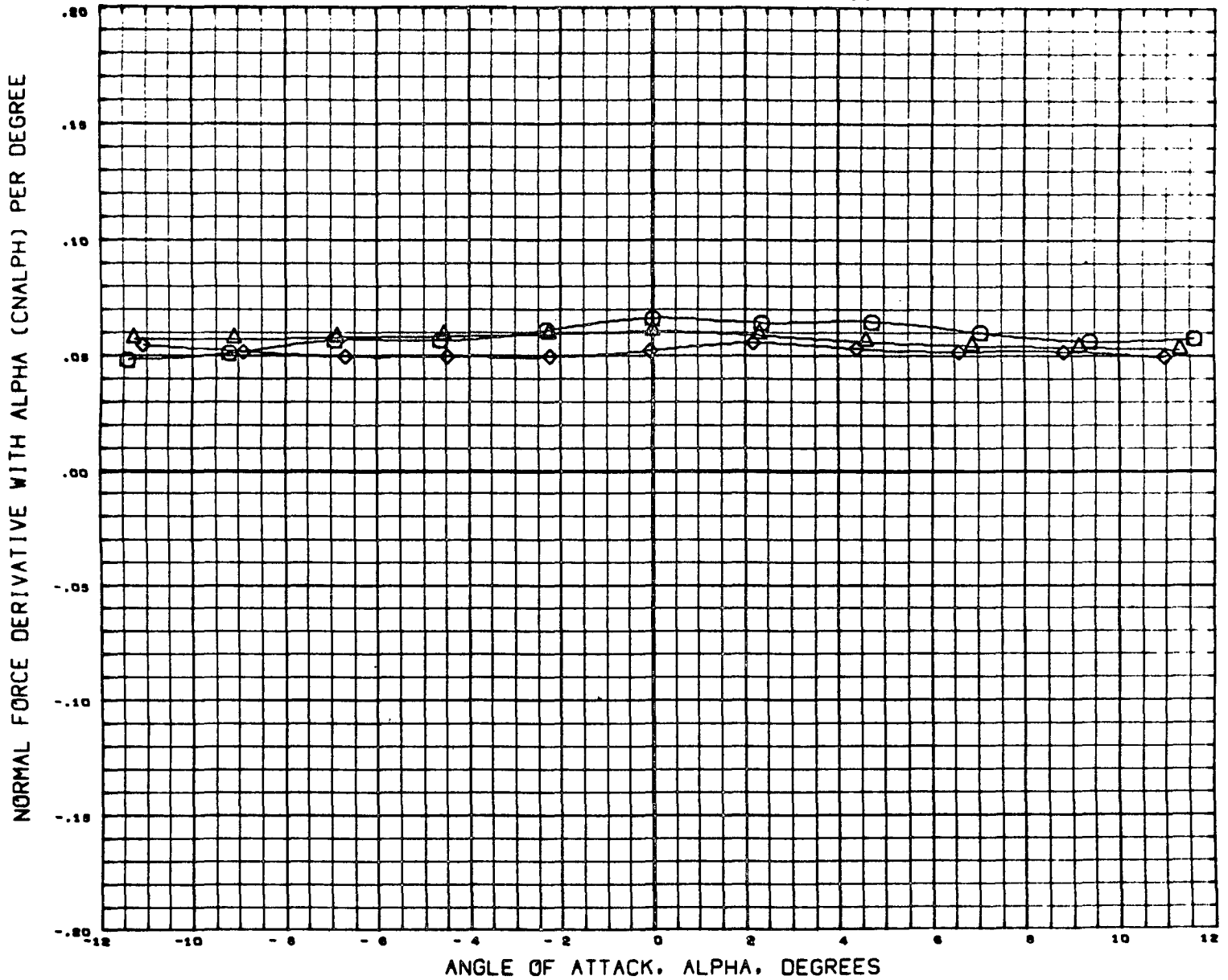


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(O3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(13241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.09

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)



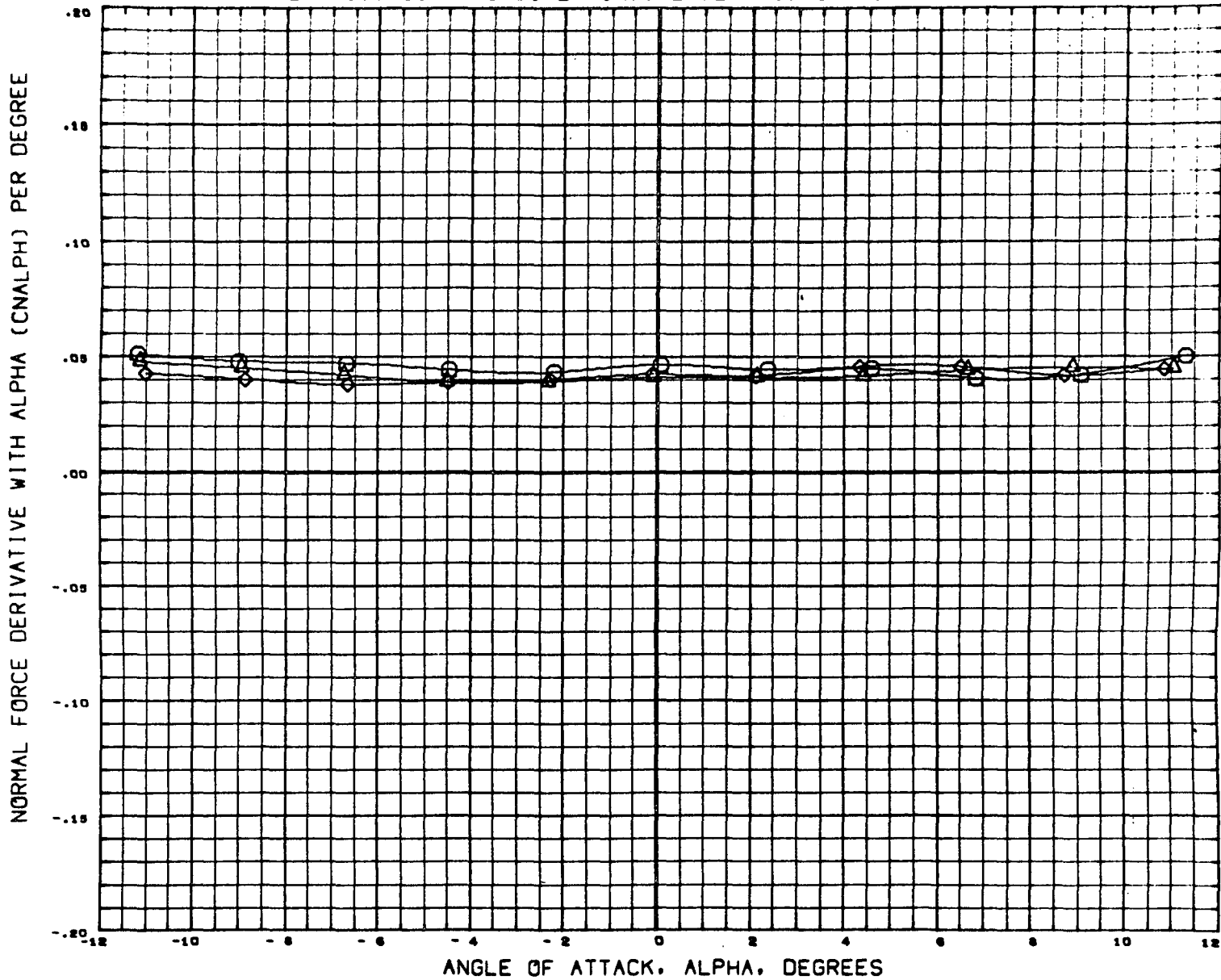
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13222A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+BSW17V17	0.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(13236A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+BSW17V17	0.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(13241A)	MSFC490 NR/GD LAUNCH 82014BW14V8+BSW17V17	0.000	3.000	0.000	0.000	BREF	0.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH

1.46

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B)

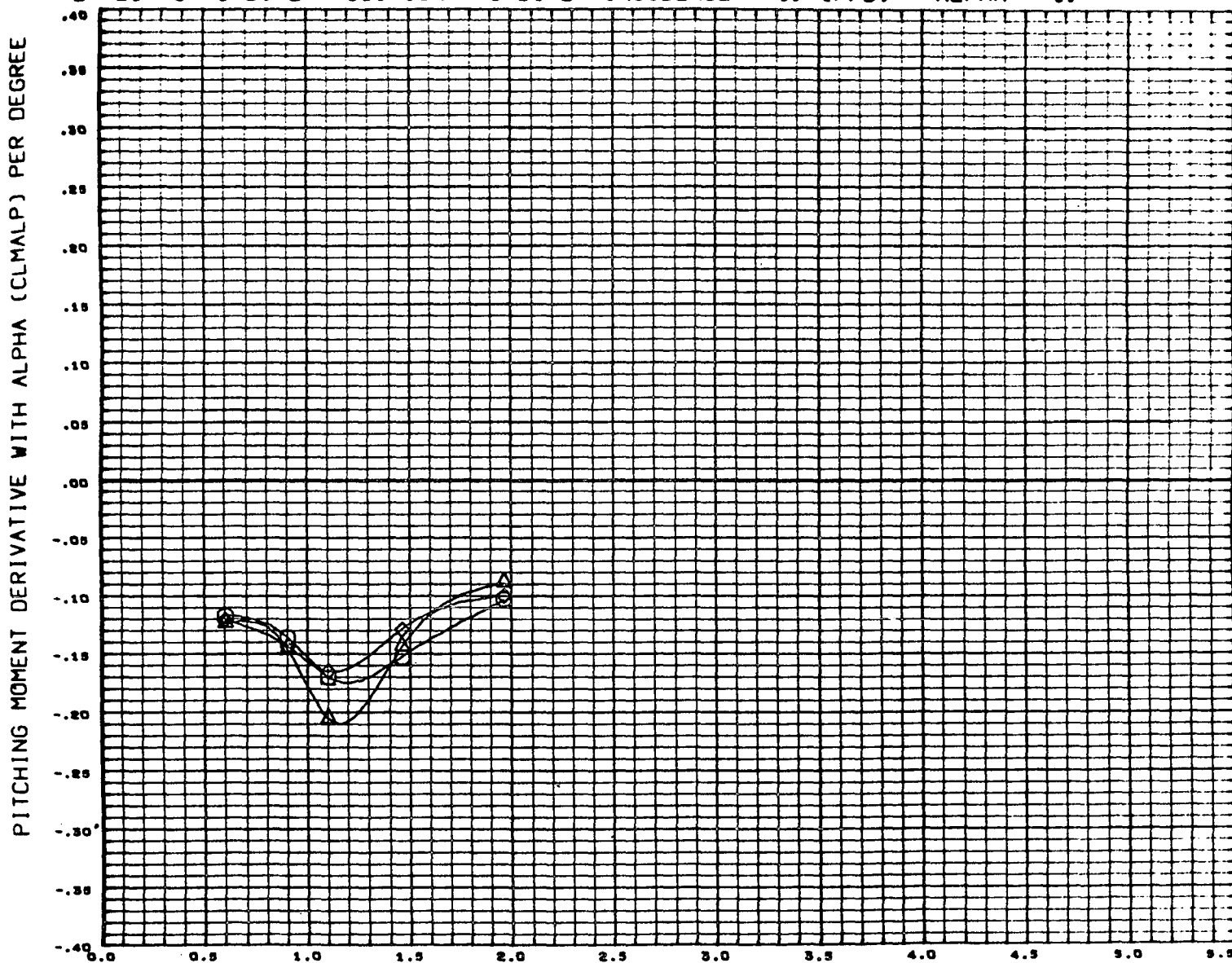


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(O3222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(I3239A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(I3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B) ALPHA = 0.



MACH NUMBER

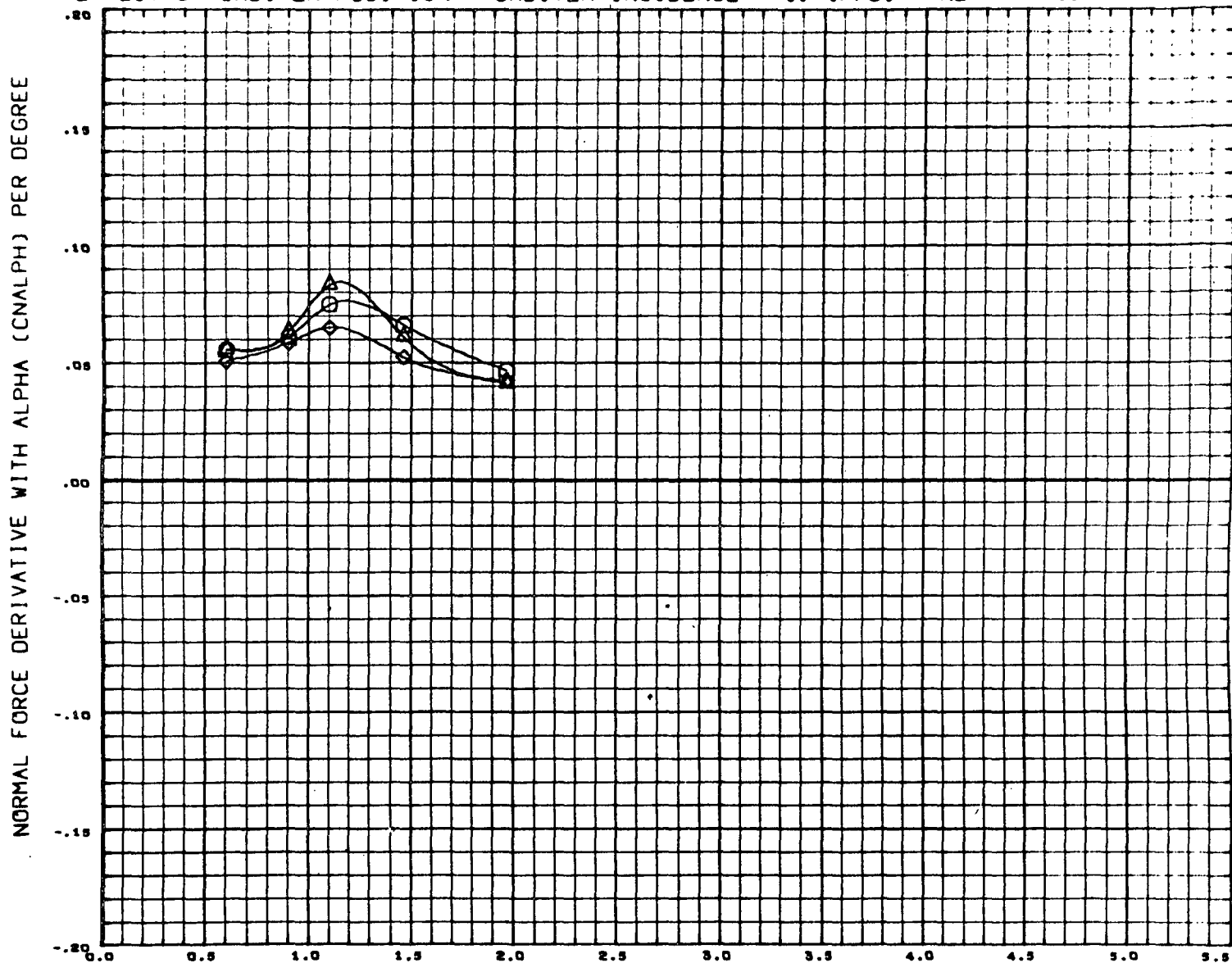
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13222A)	M3FC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(J3235A)	M3FC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(J3241A)	M3FC490 NR/GD LAUNCH B2014BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	1.000	0.000	0.000	SREF 15.6560 30 IN
0.000	2.000	0.000	0.000	LREF 3.0950 INCHES
0.000	3.000	0.000	0.000	BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B) ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3222A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17
(J3239A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17
(J3241A)	MSFC490 NR/GD LAUNCH 82014BW14V8+85W17V17

MACH NUMBER

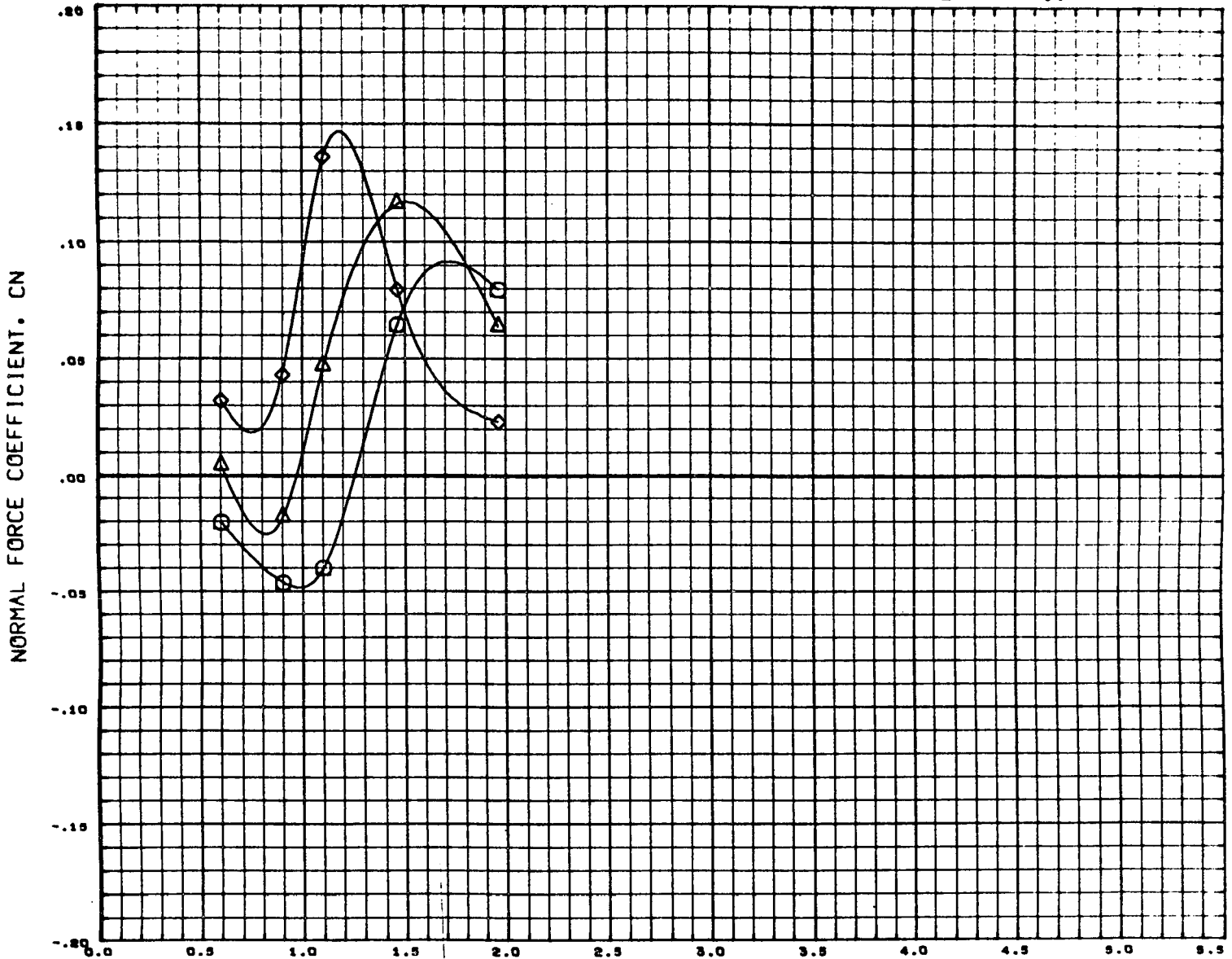
ORBINC	POSITN	BETA	ELVATR
0.000	1.000	0.000	0.000
0.000	2.000	0.000	0.000
0.000	3.000	0.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

ALPHA .00

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B) ALPHA = 0.

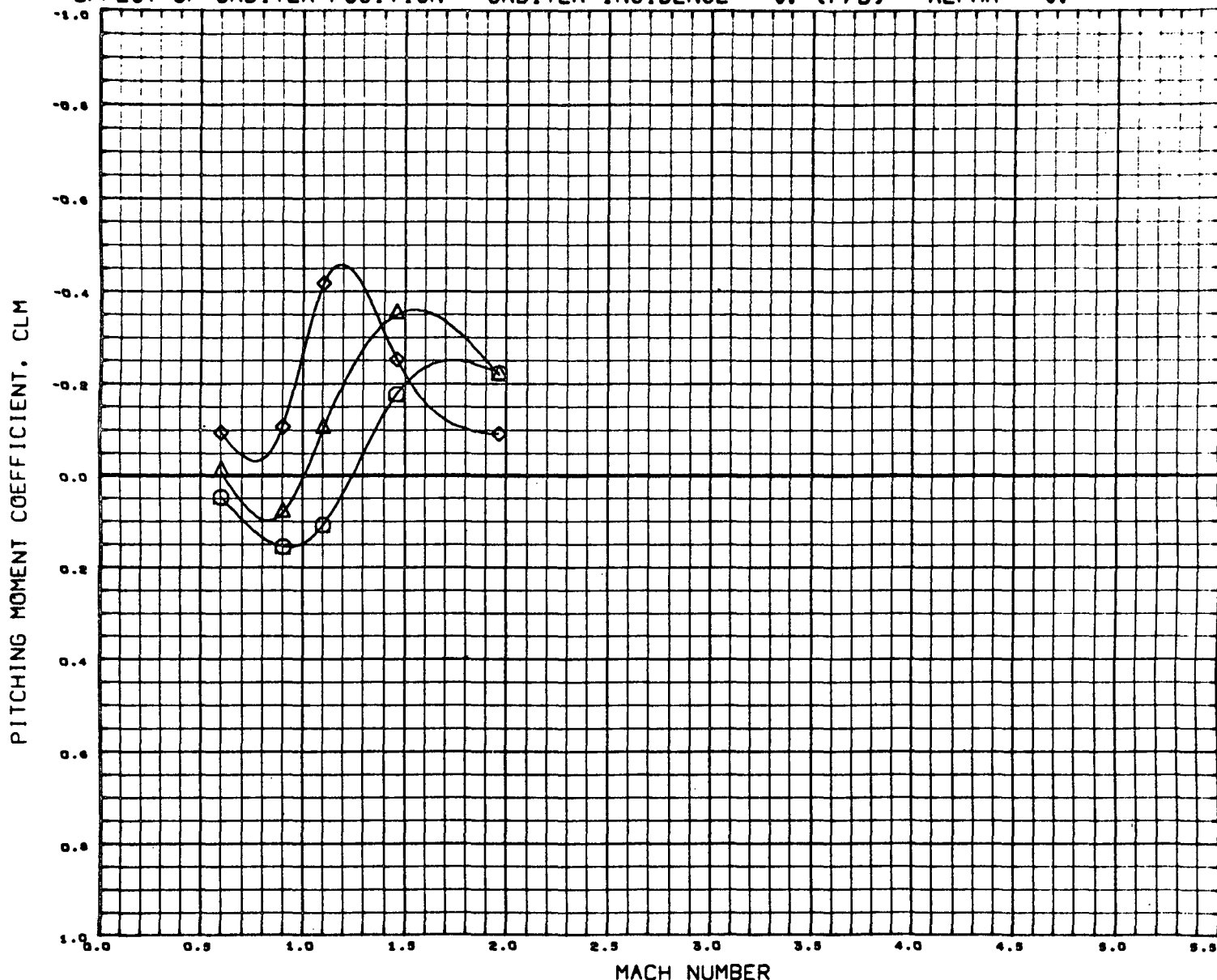


MACH NUMBER

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(K3222A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(K3234A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(K3241A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

ALPHA .00

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B) ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(23222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(K3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(K3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	1.000	0.000	0.000	SREF	15.6560 30 IN
0.000	2.000	0.000	0.000	LREF	3.0950 INCHES
0.000	3.000	0.000	0.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (P/B) ALPHA = 0.



MACH NUMBER

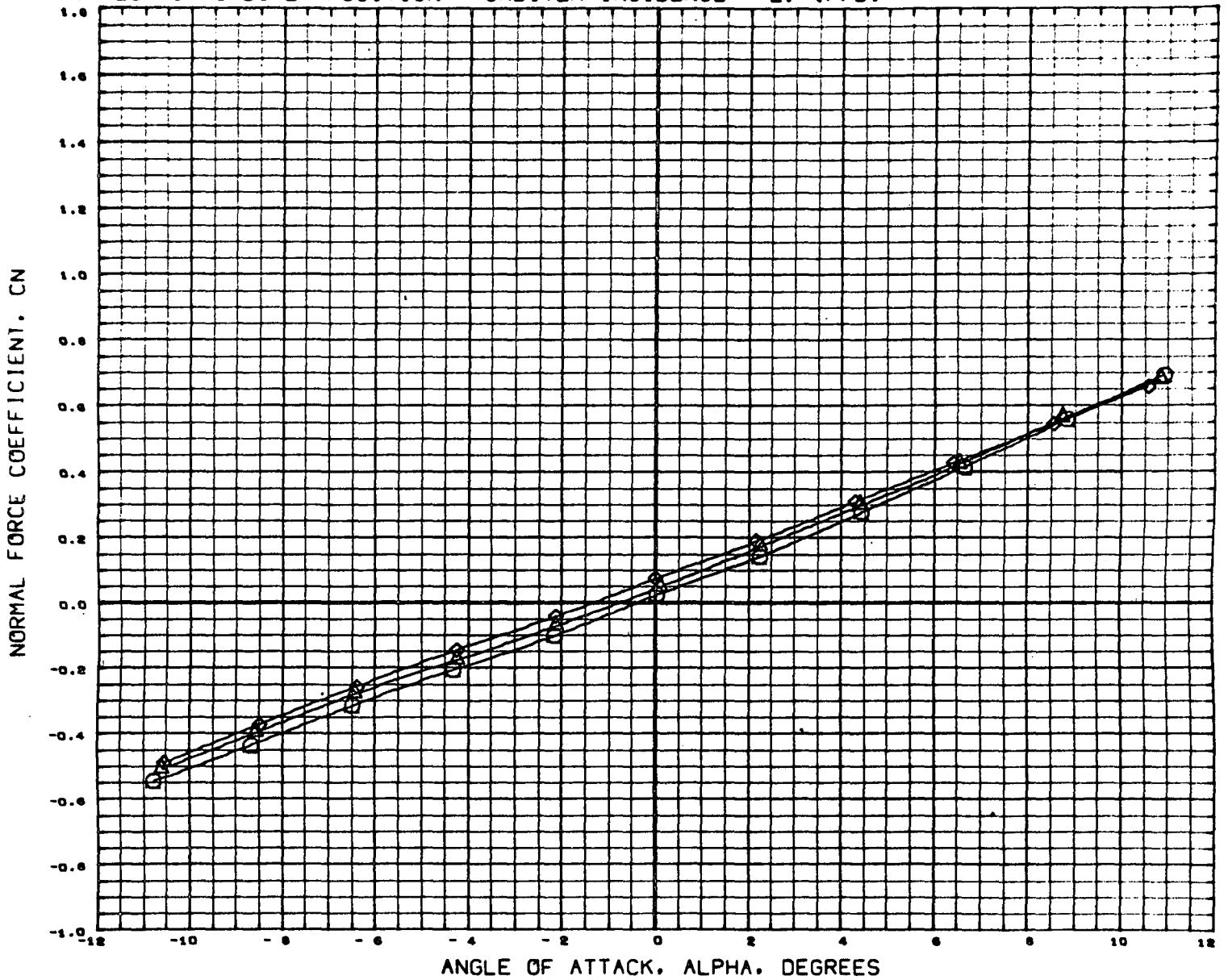
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K3222A) ○	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17
(K3235A) △	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17
(K3241A) ◇	MSFC490 NR/GD LAUNCH B20148W14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	1.000	0.000	0.000	SREF 15.6360 SQ IN
0.000	2.000	0.000	0.000	LREF 3.0950 INCHES
0.000	3.000	0.000	0.000	BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

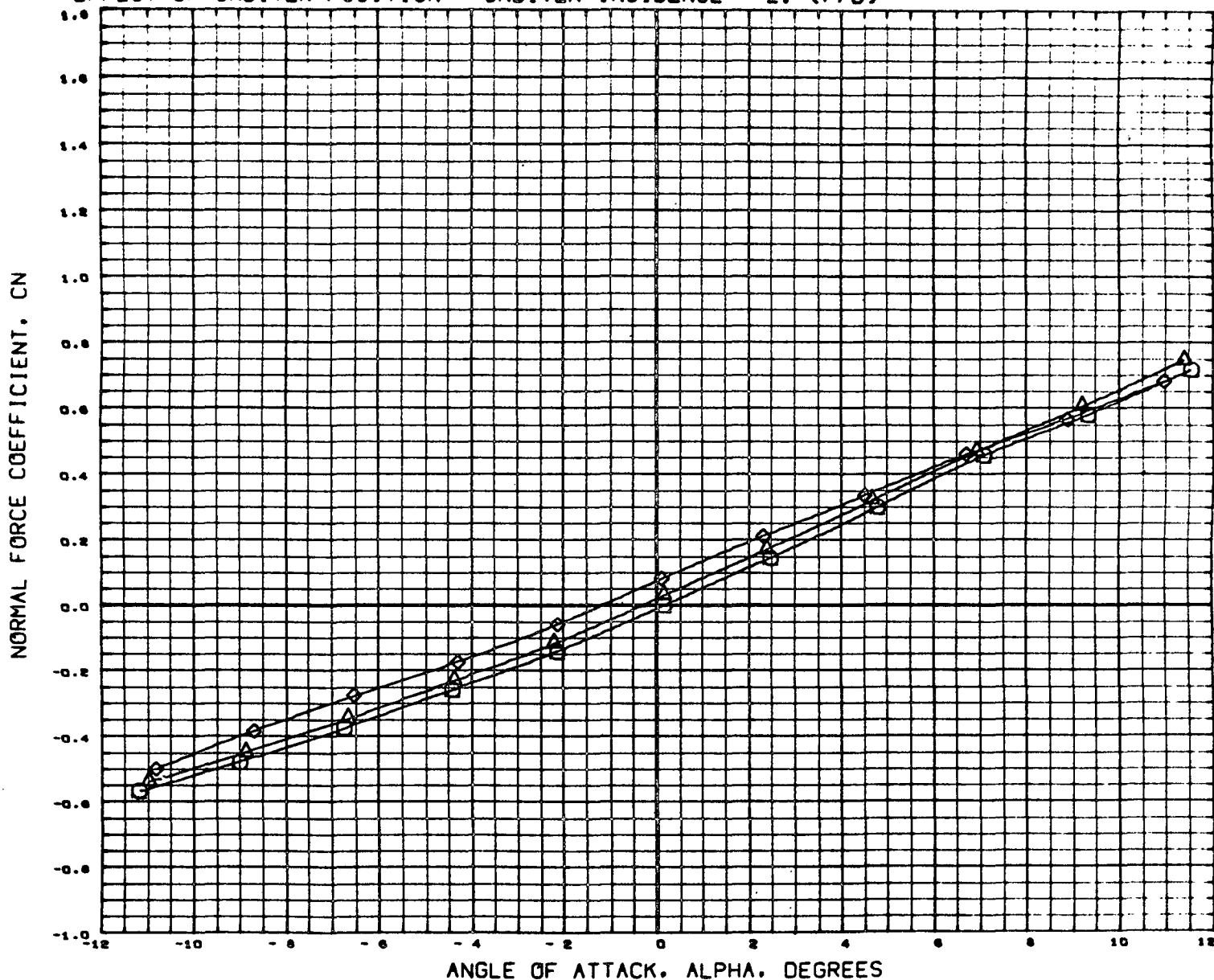


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

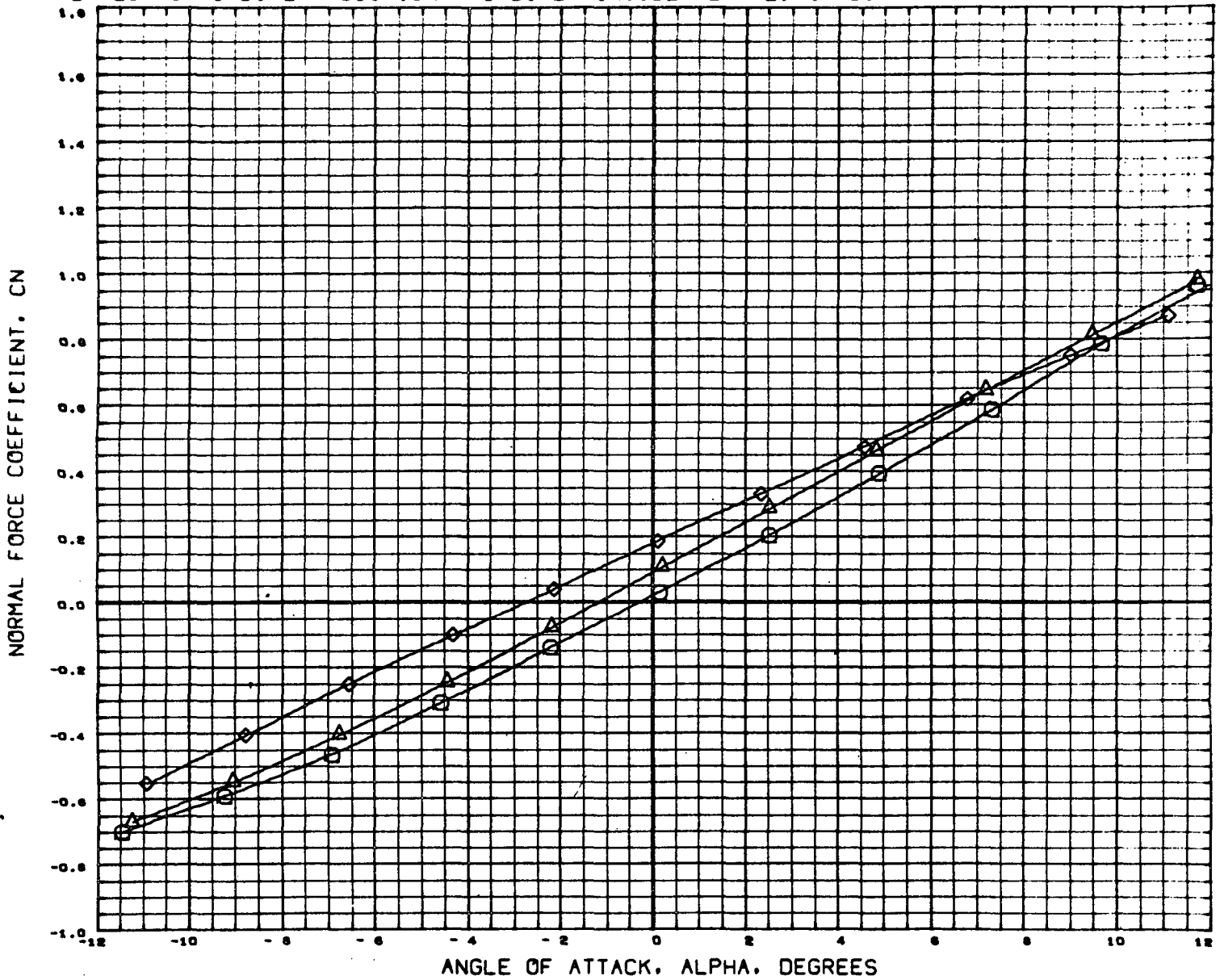


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(H3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560	SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0910	INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)



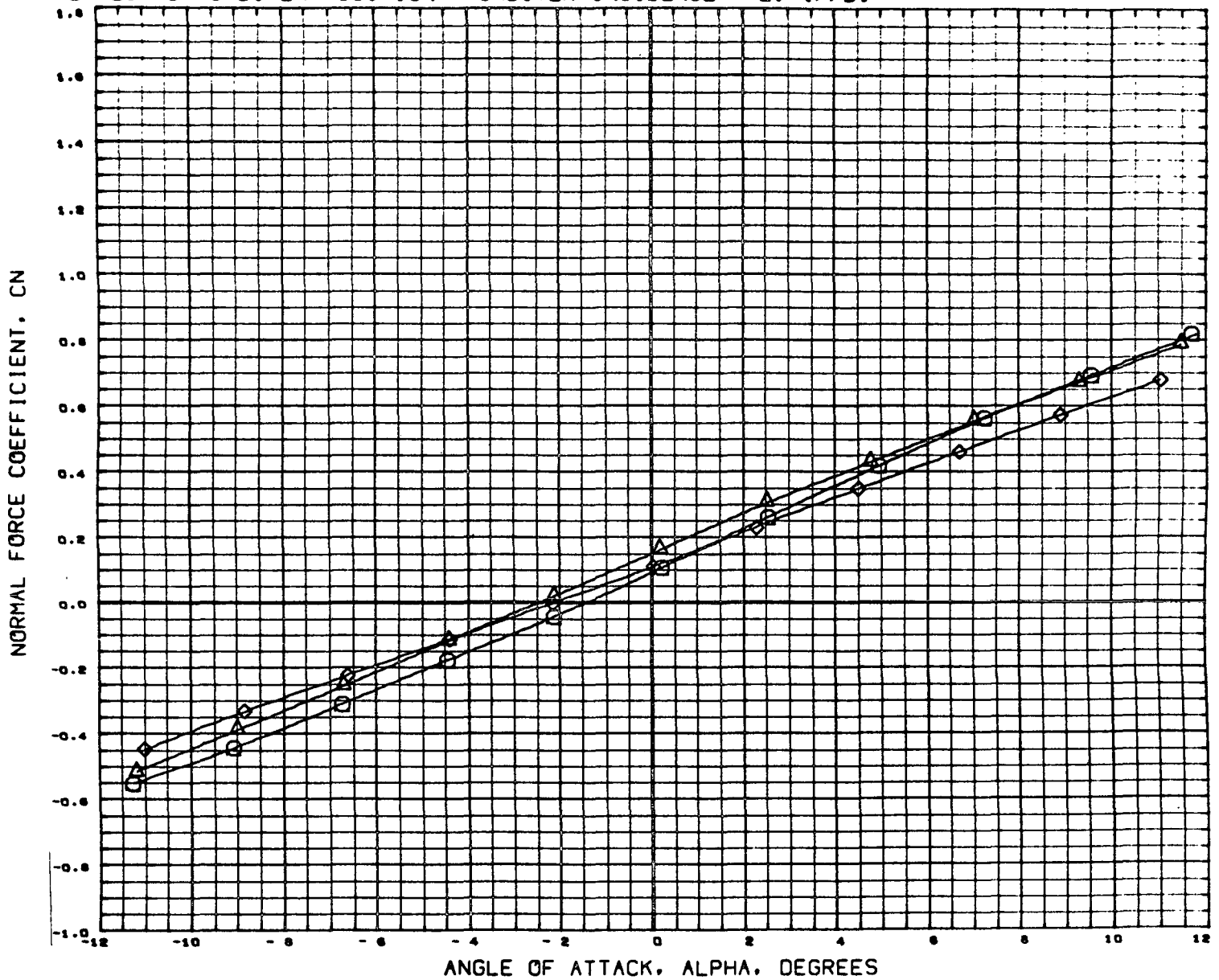
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(H3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH

1.10

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

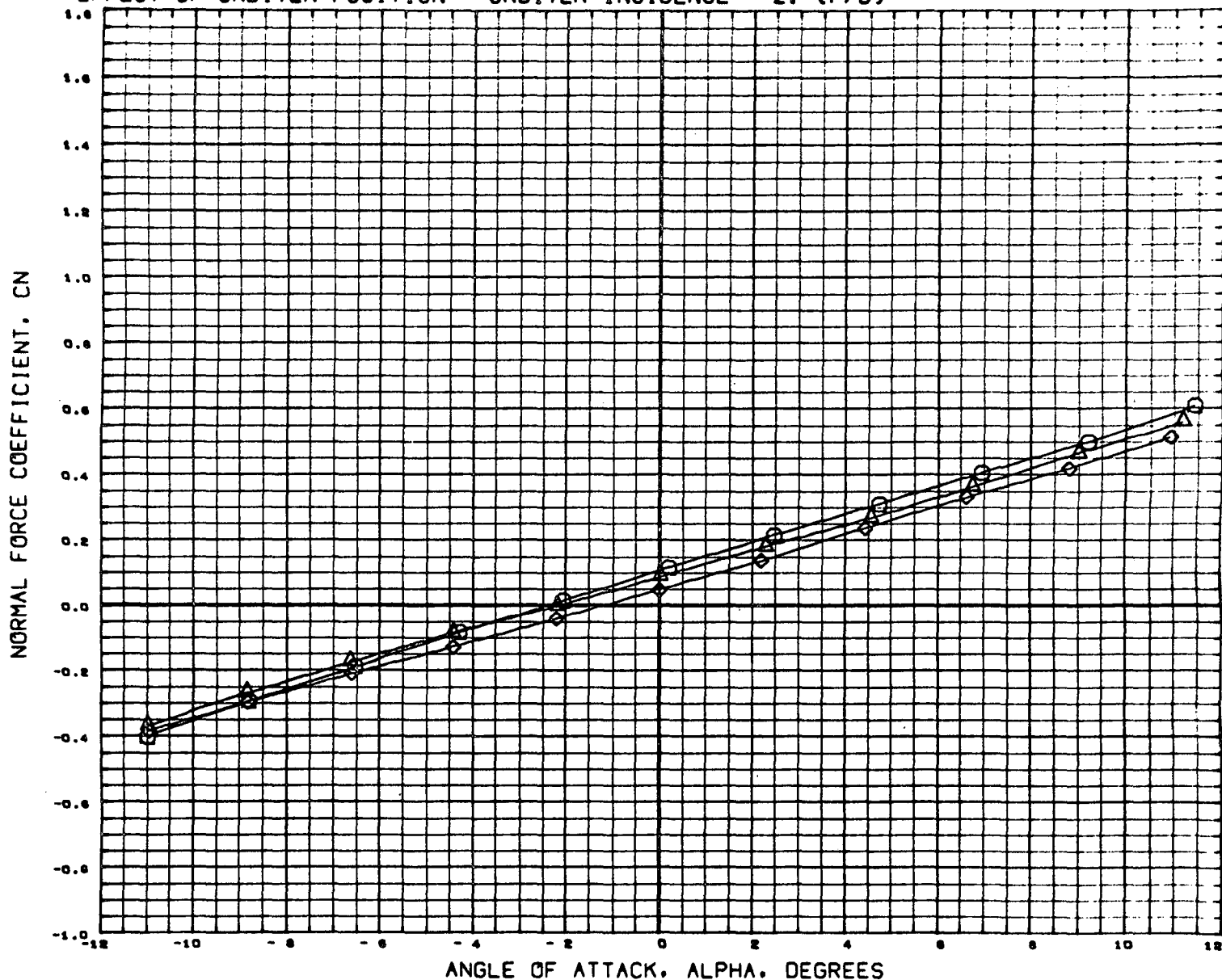


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
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(H3239A)	MSFC490 NR/GO LAUNCH B20Z48W14V8+B35W17V17	2.000	2.000	0.000	0.000	LREF	3.0850	INCHES
(H3243A)	MSFC490 NR/GO LAUNCH B20C48W14V8+B35W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
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						YNRP	0.0000	
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MACH 1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

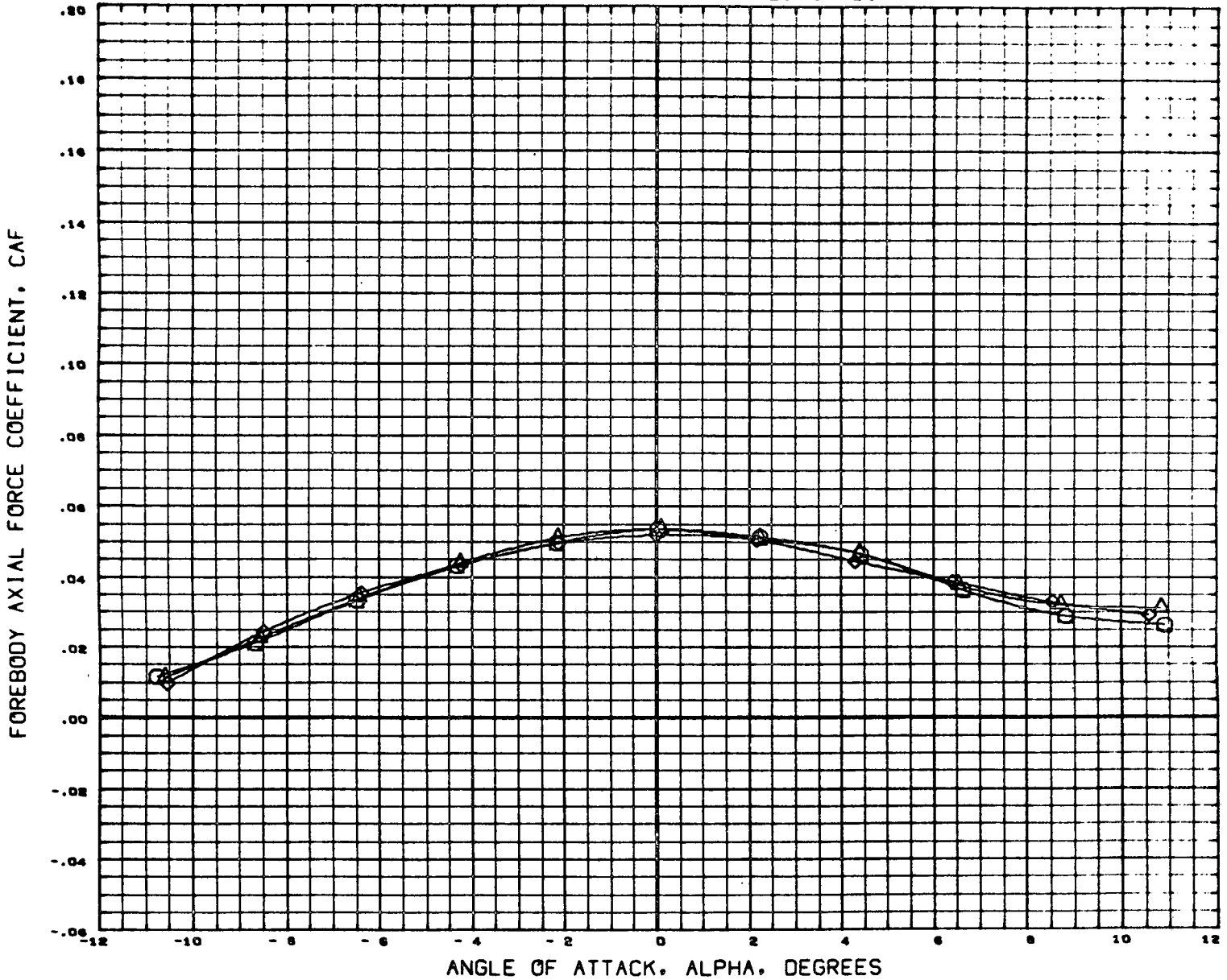


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(H3238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B20Z4BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
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MACH 1.96

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)



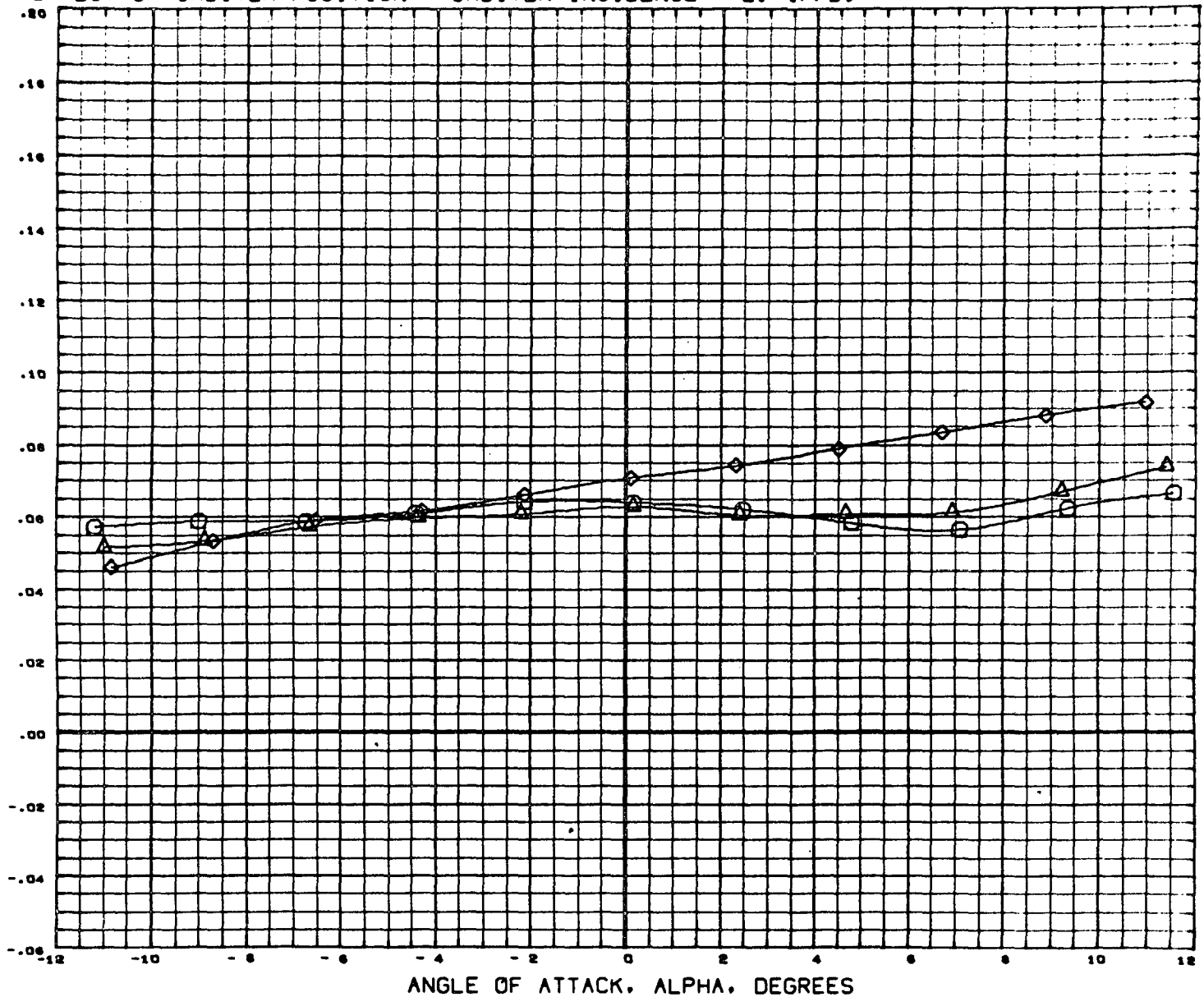
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(H3236A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	2.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(H3239A)	MSFC490 NR/GD LAUNCH 820Z4BW14V8+85W17V17	2.000	2.000	0.000	0.000	LREF	3.0930	INCHES
(H3243A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

FOREBODY AXIAL FORCE COEFFICIENT, CAF



DATA SET SYMBOL

CONFIGURATION DESCRIPTION

(H3236A)
(H3239A)
(H3243A)

HSFC490 NR/60 LAUNCH B20C4BW14V8+B5W17V17
HSFC490 NR/60 LAUNCH B20Z4BW14V8+B5W17V17
HSFC490 NR/60 LAUNCH B20C4BW14V8+B5W17V17

ORBITER

POSITION

BETA

ELVATR

REFERENCE INFORMATION

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2.000 2.000 0.000 0.000
2.000 3.000 0.000 0.000

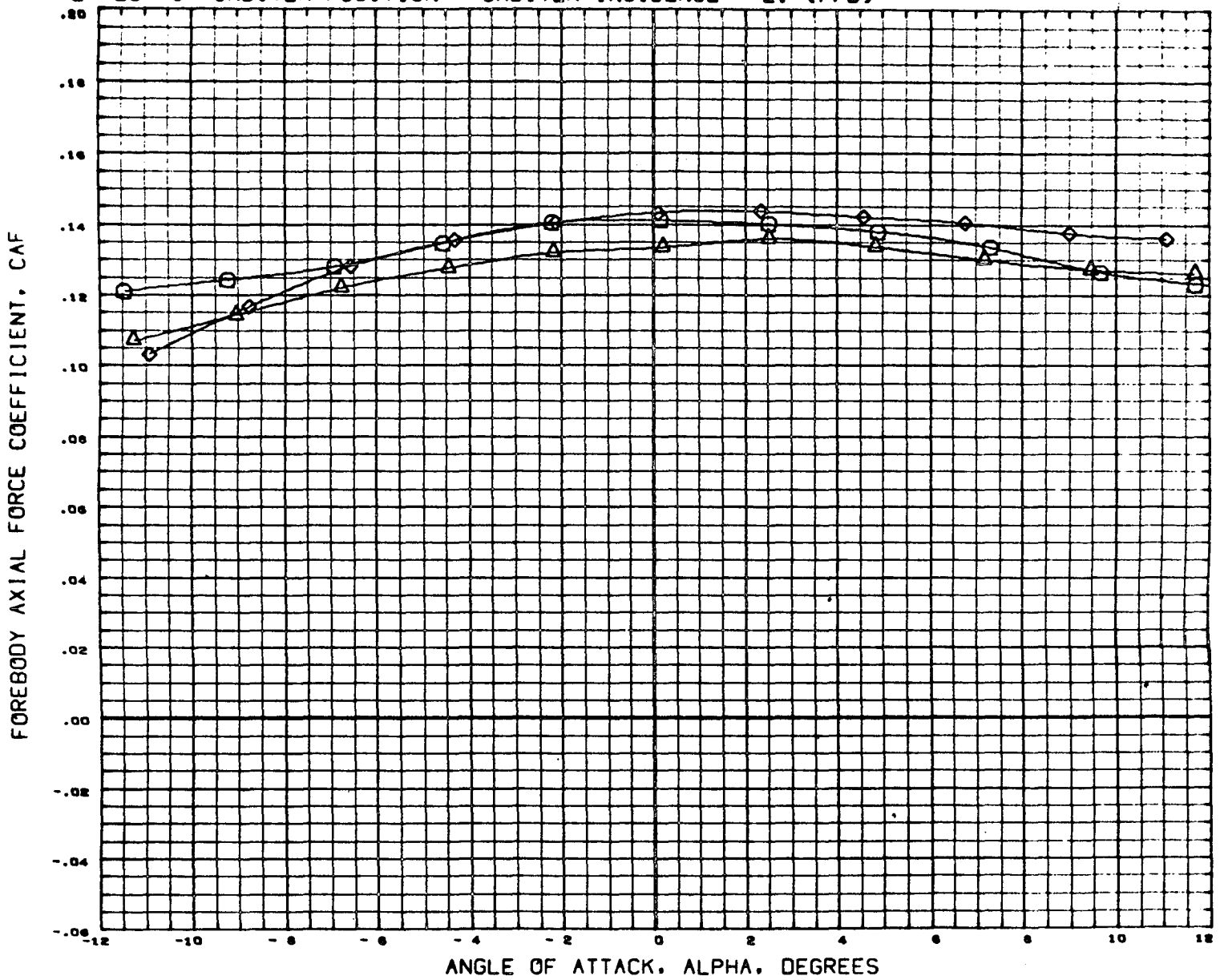
SREF 15.6560 80 IN
LREF 3.0950 INCHES
BREF 6.0990 INCHES
XMRP 0.0000
YMRP 0.0000
ZMRP 0.0000
SCALE 0.0035 SCALE

MACH

.90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

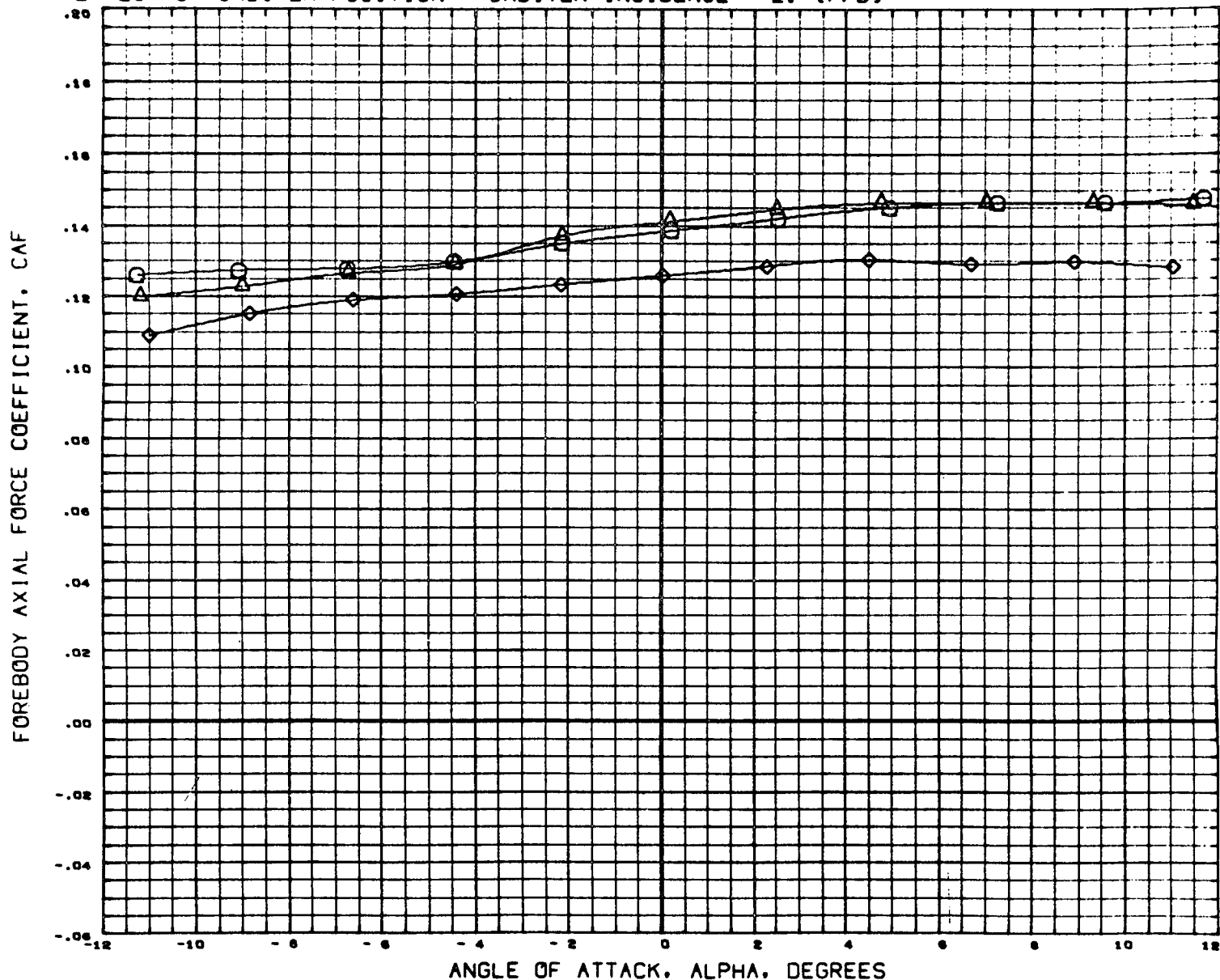


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(H3239A)	MSFC490 NR/60 LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(H3243A)	MSFC490 NR/60 LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

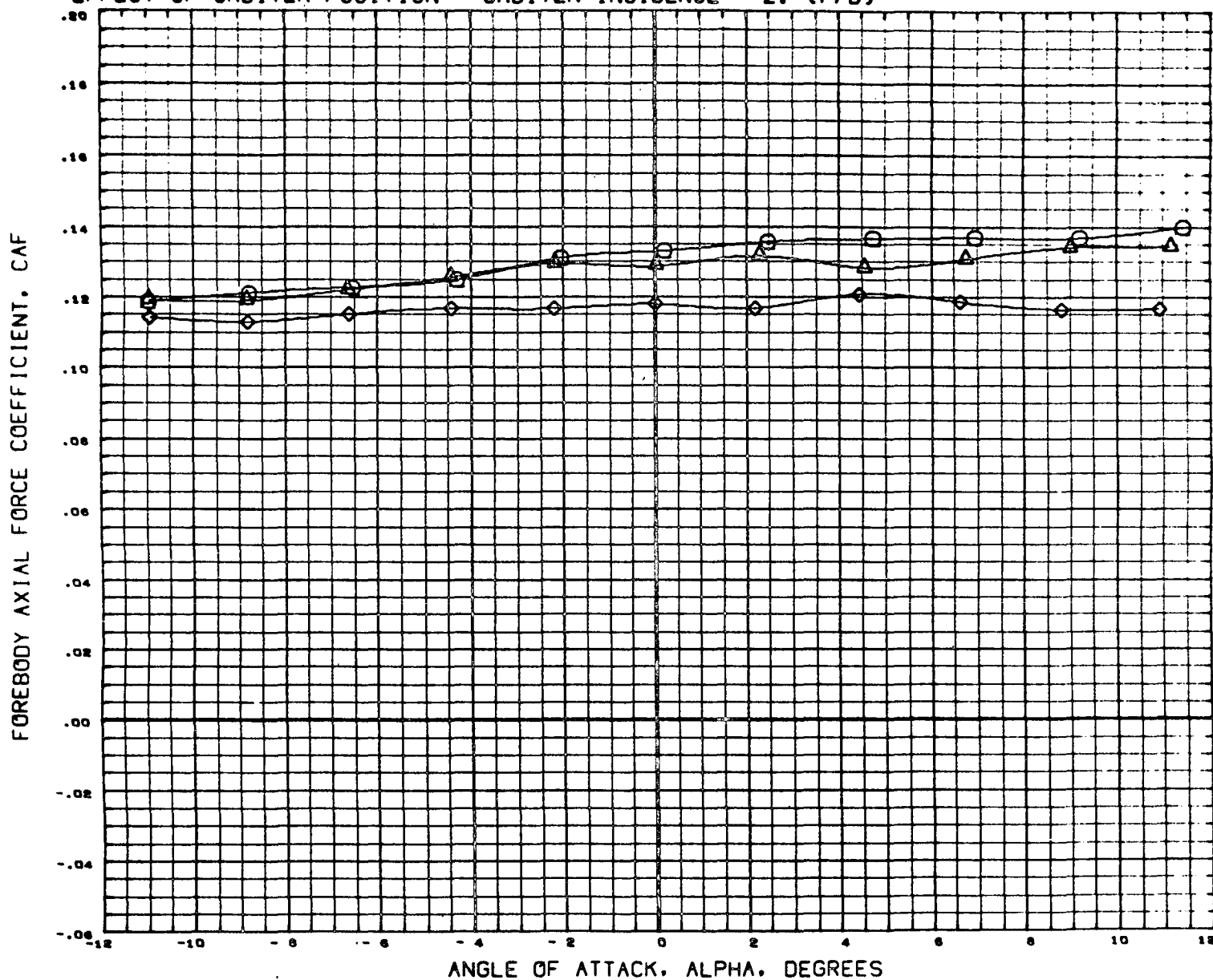


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	1.000	0.000	0.000	SREF	19.6360 SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

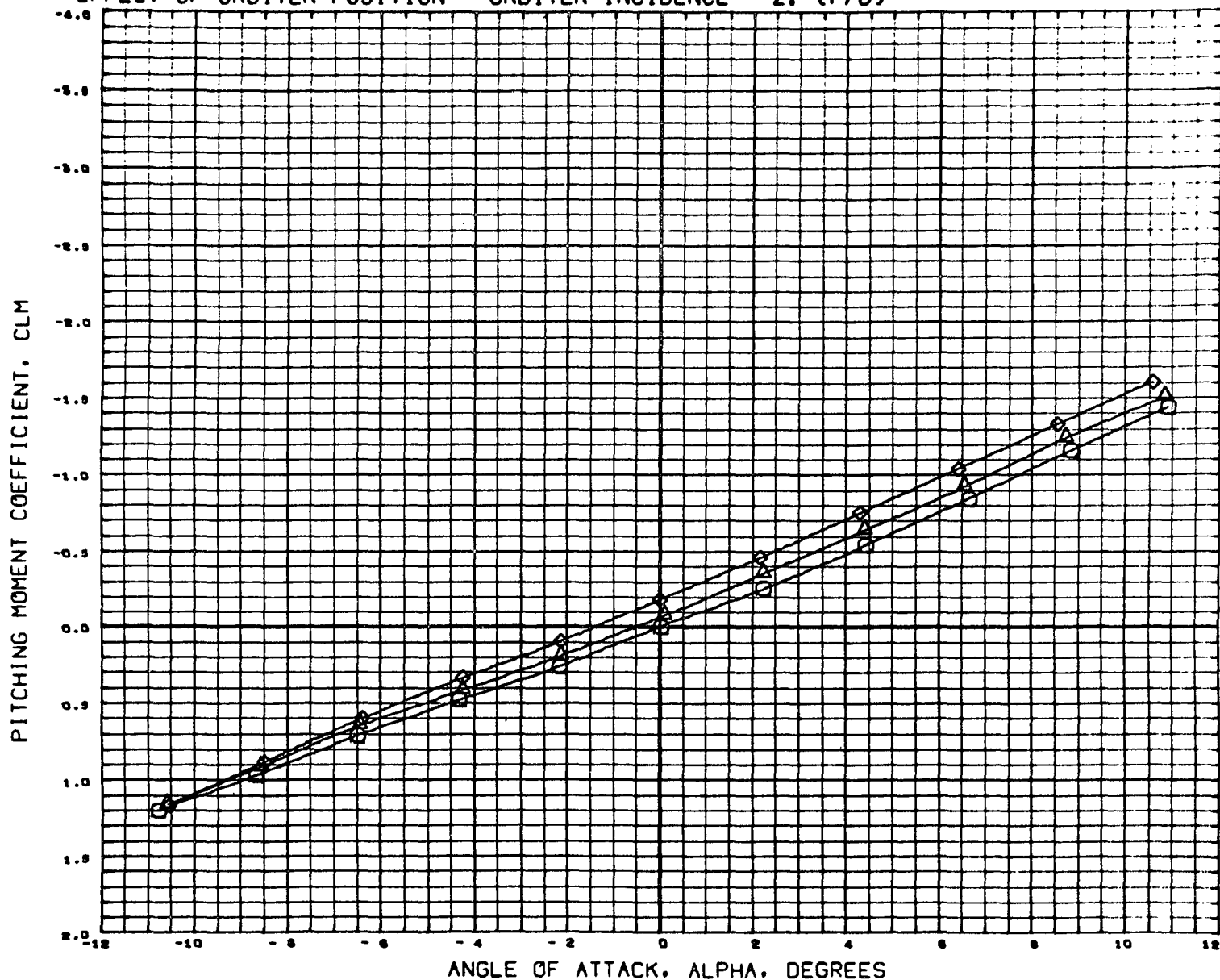


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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

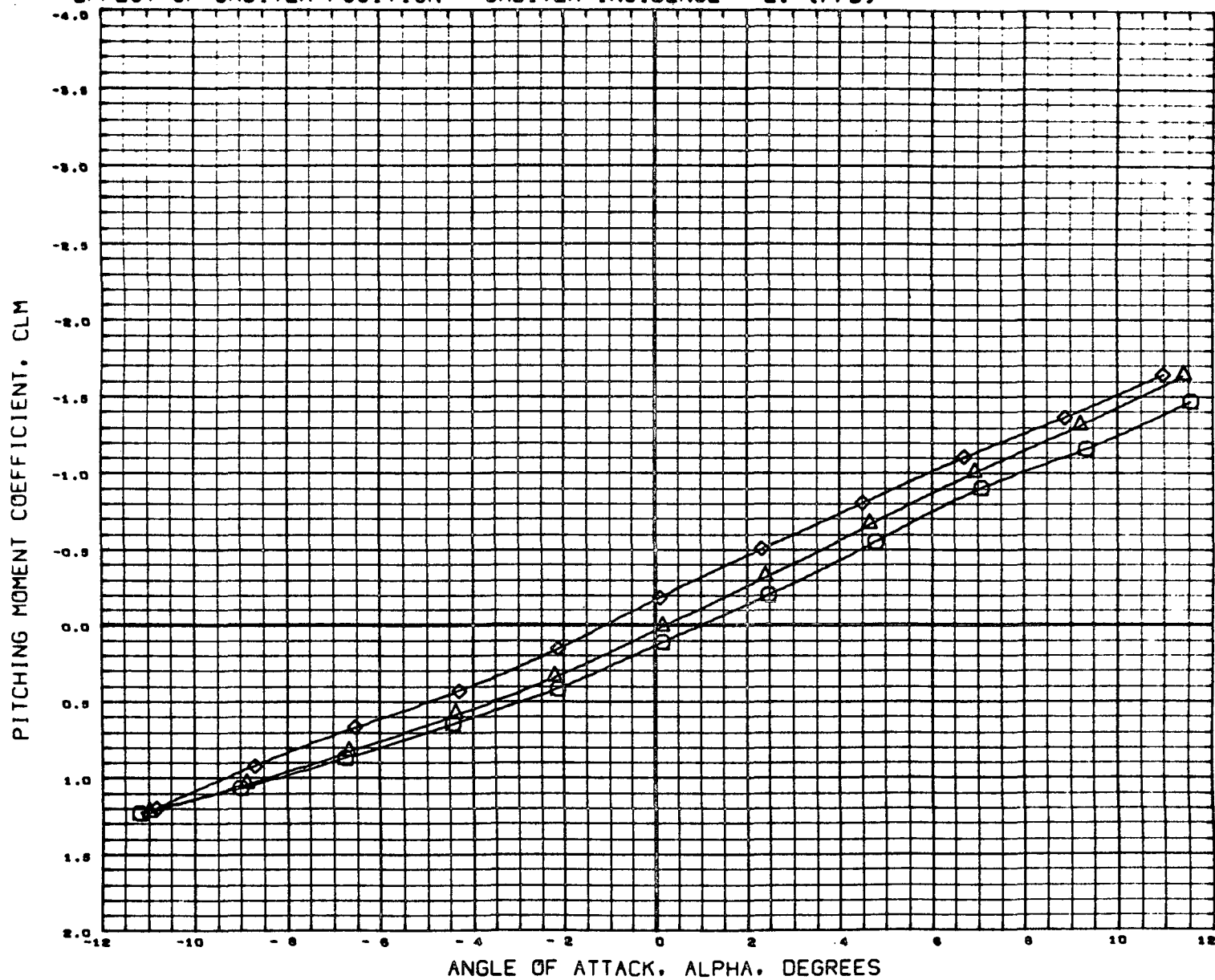


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B20Z4BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

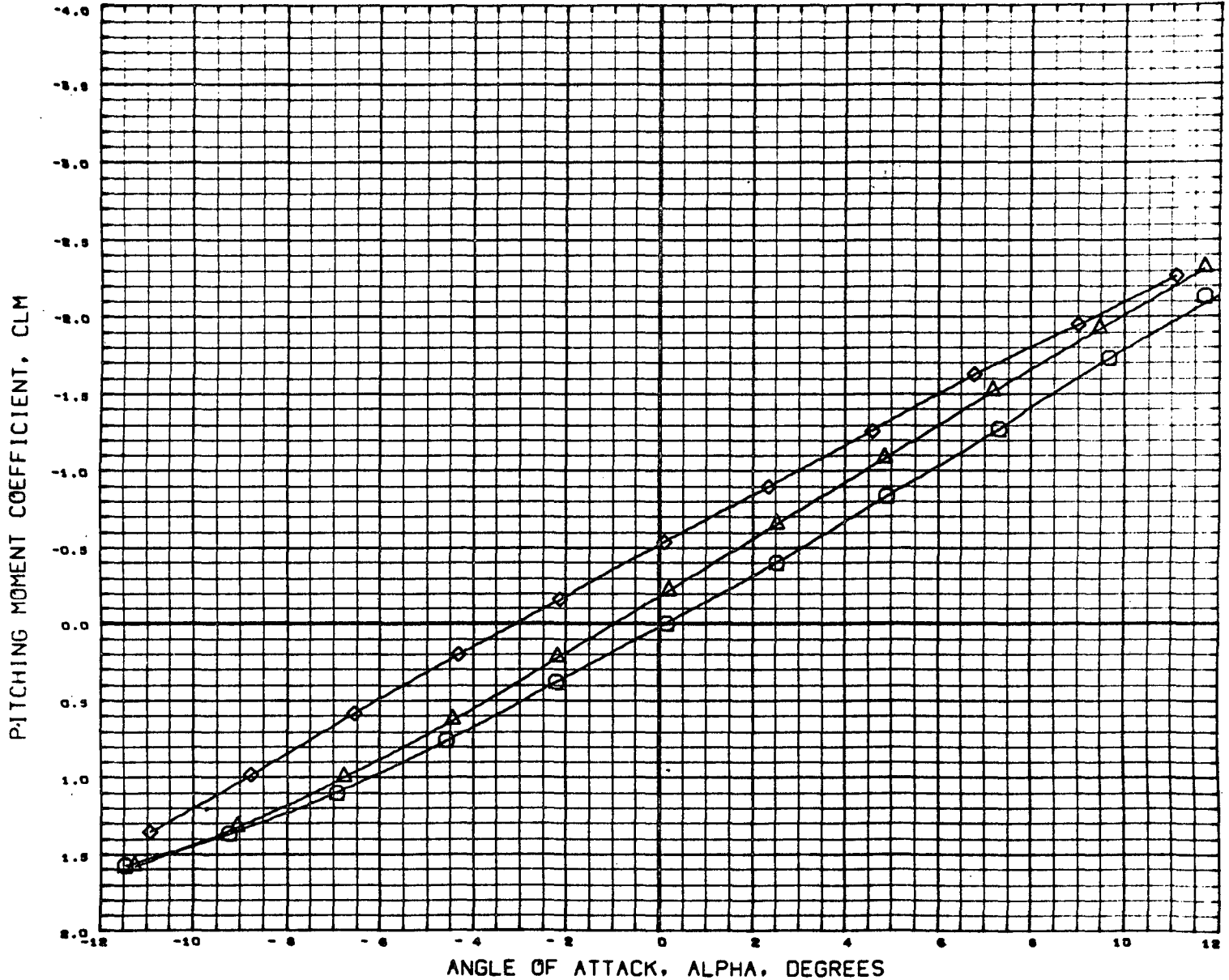


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(H3239A)	MSFC490 NR/GD LAUNCH B20248W14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

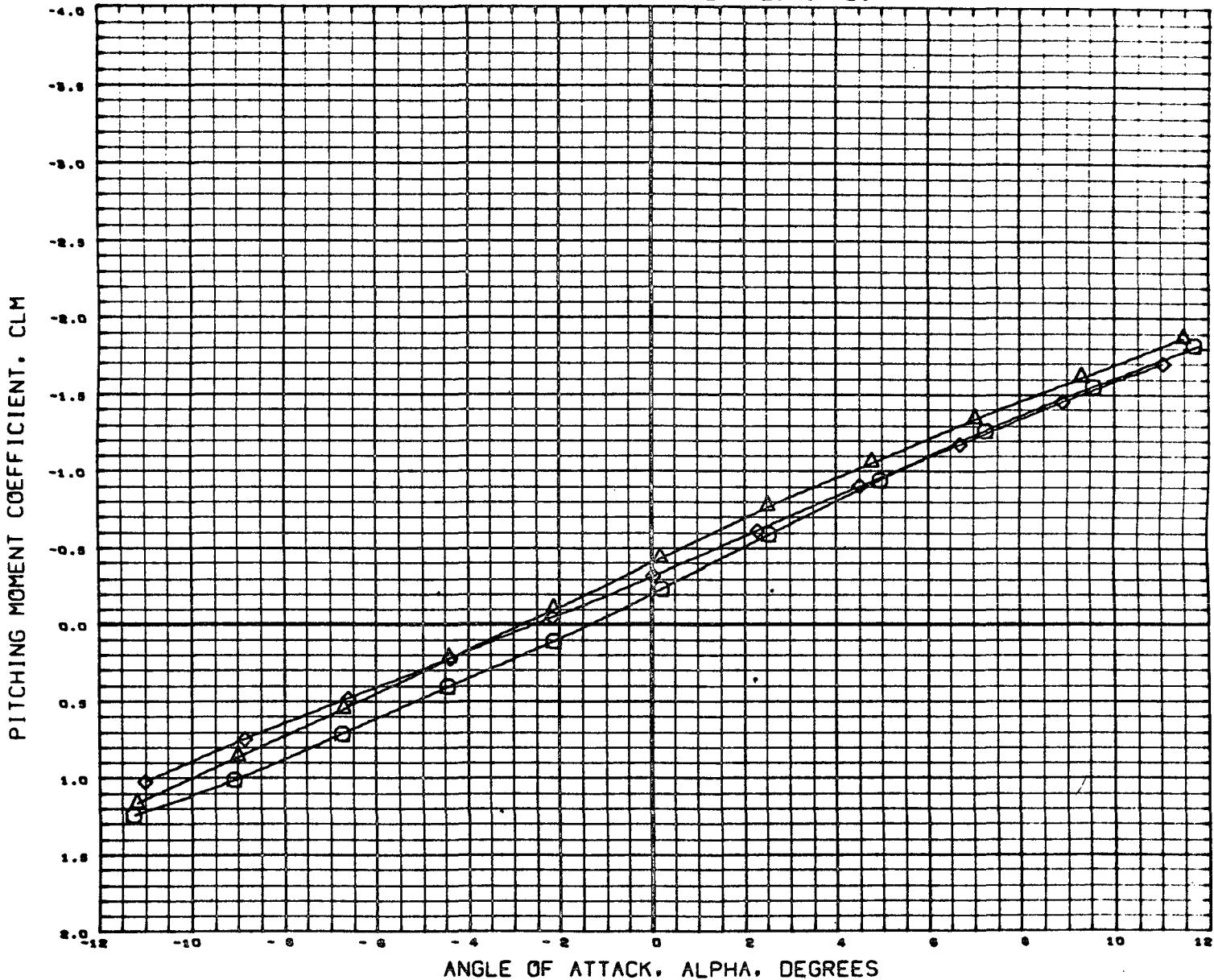


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(H3236A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	2.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(H3239A)	MSFC490 NR/GD LAUNCH 82024BW14V8+85W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(H3243A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
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						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.10

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

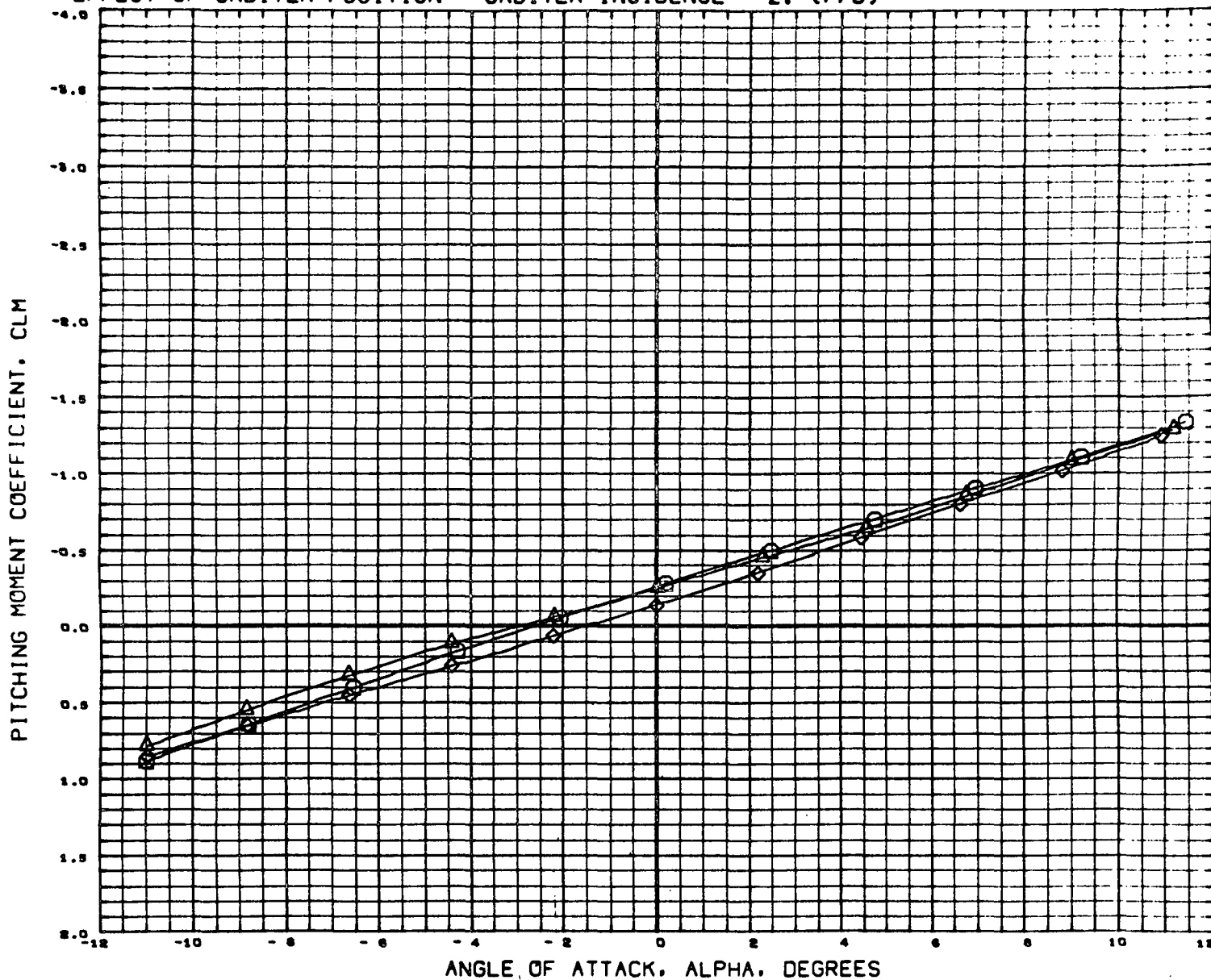


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

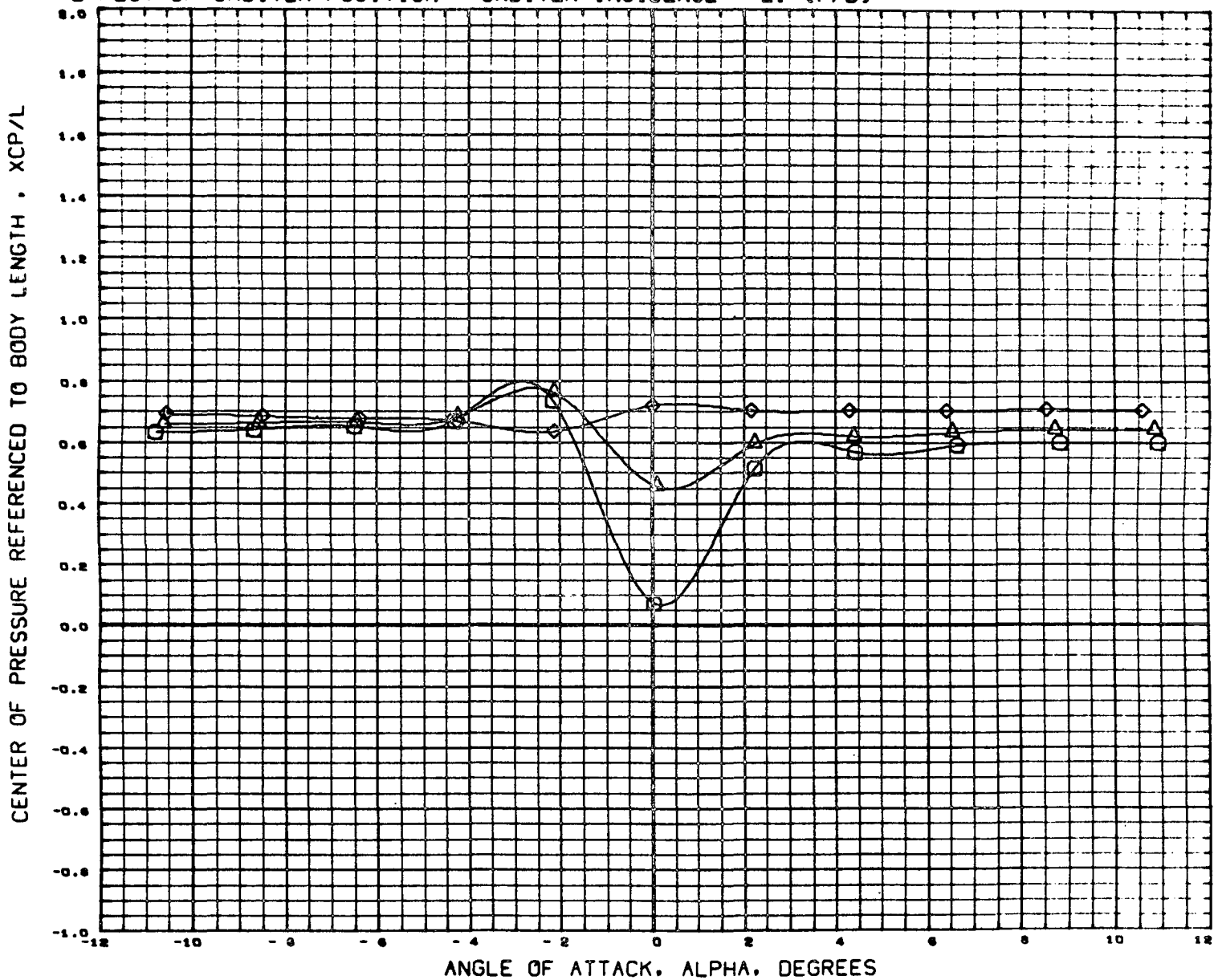


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V6+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B3W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

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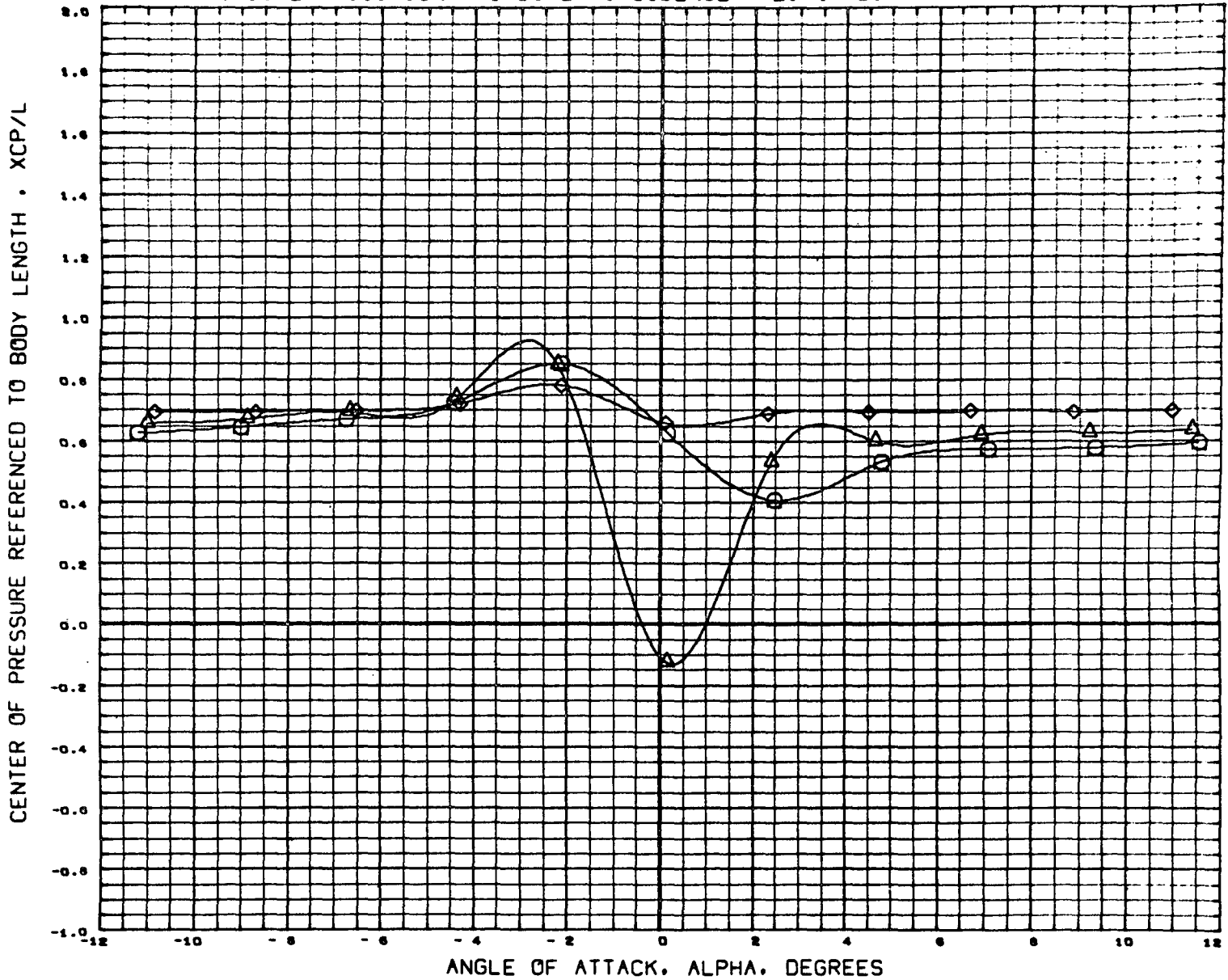
EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						YMRP	0.0000
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MACH .60

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

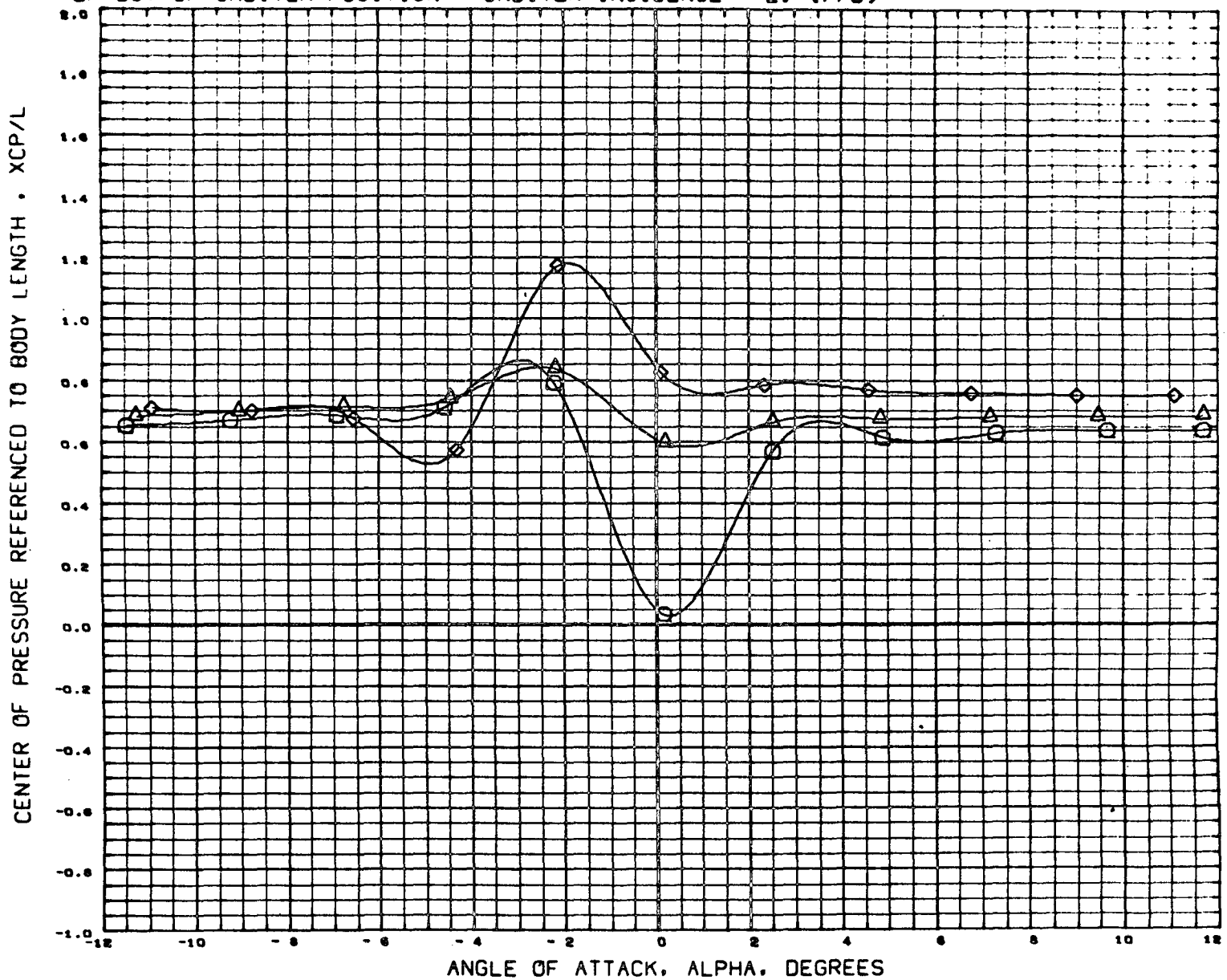


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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(H3239A)	MSFC490 NR/GD LAUNCH 82024BW14V8+85W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

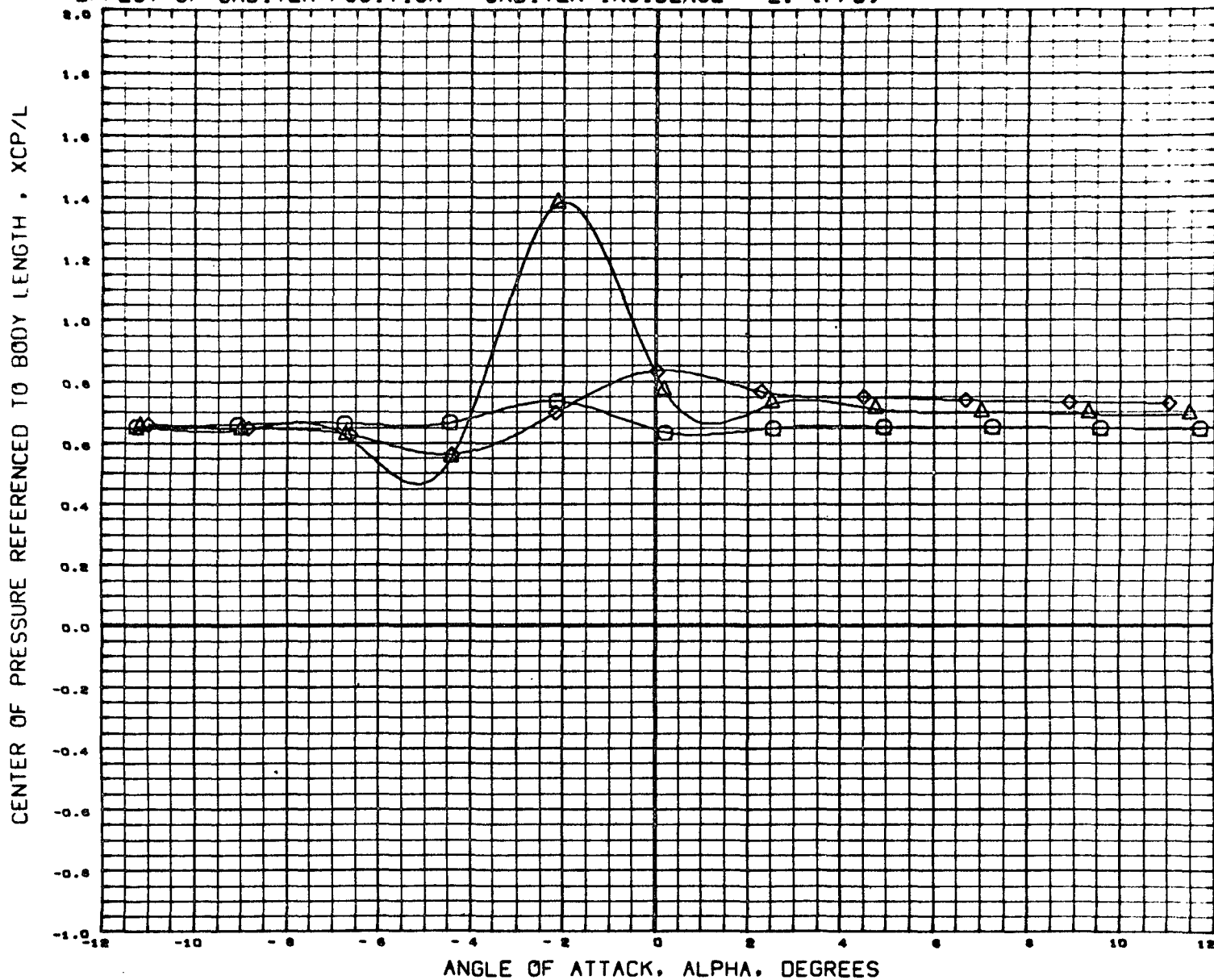


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
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(M3239A)	MSFC490 NR/GD LAUNCH 82024BW14V8+85W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(M3243A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.10

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

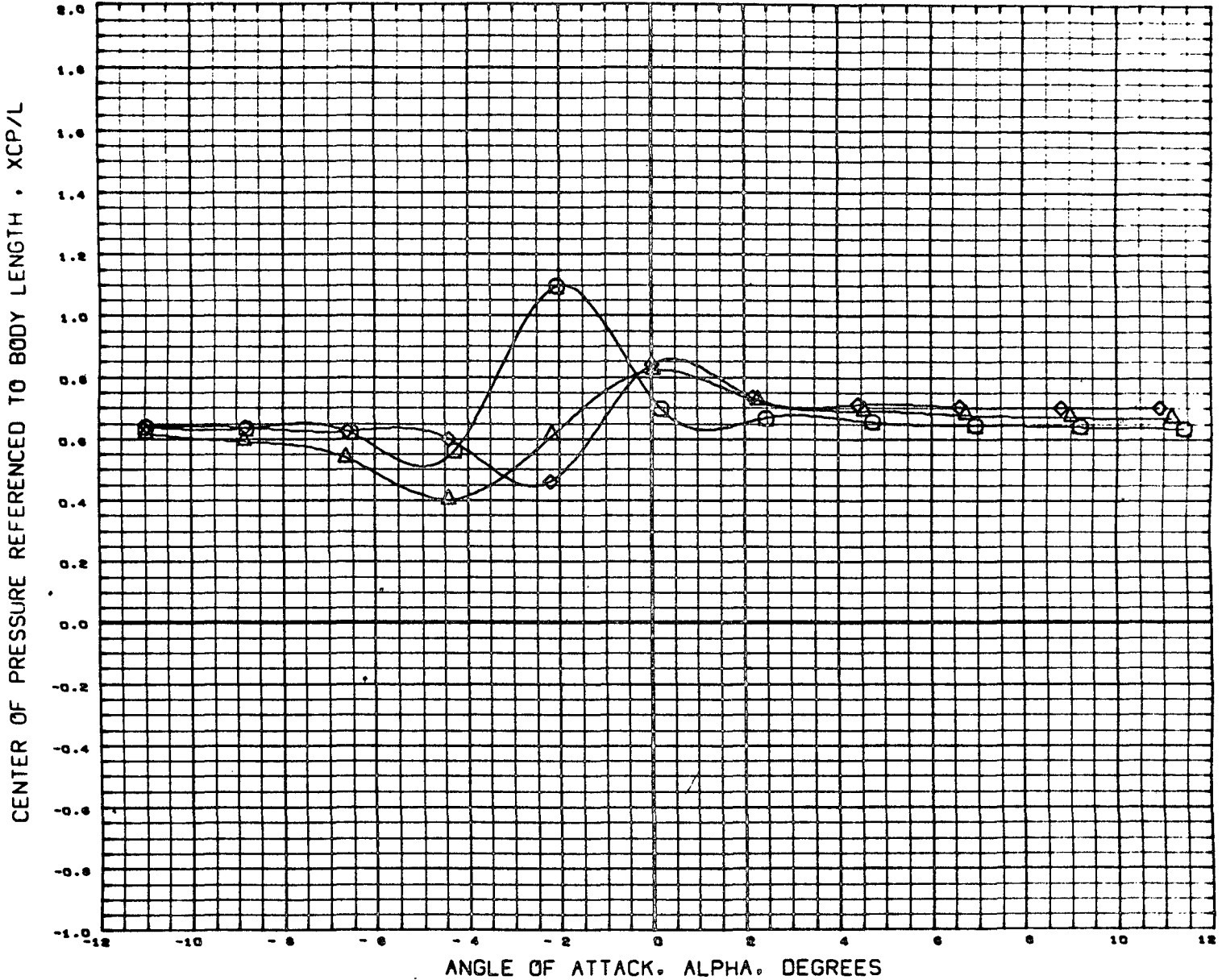


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
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(H3239A)	M3FC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0990	INCHES
(H3243A)	M3FC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

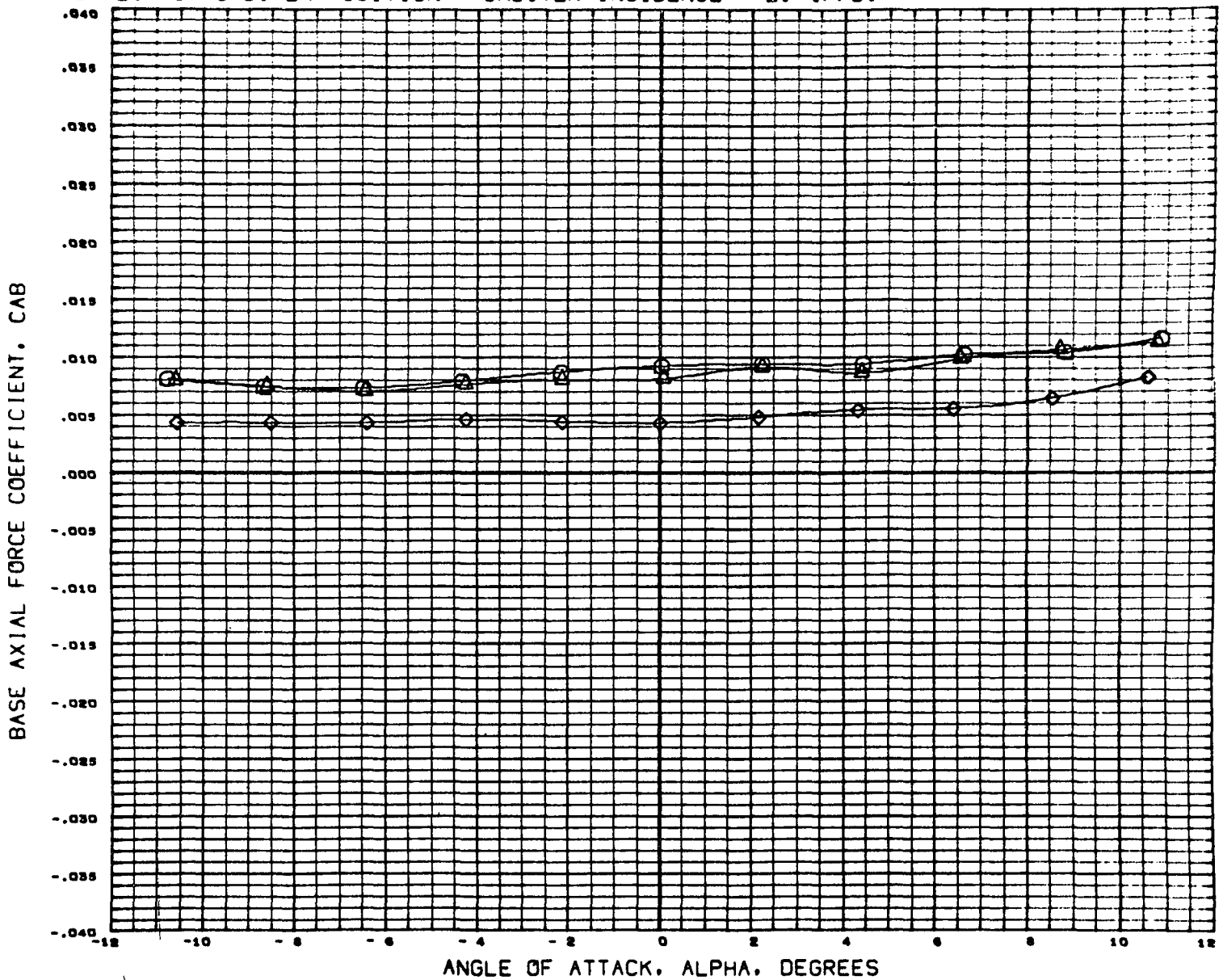


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
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(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0930	INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.96

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

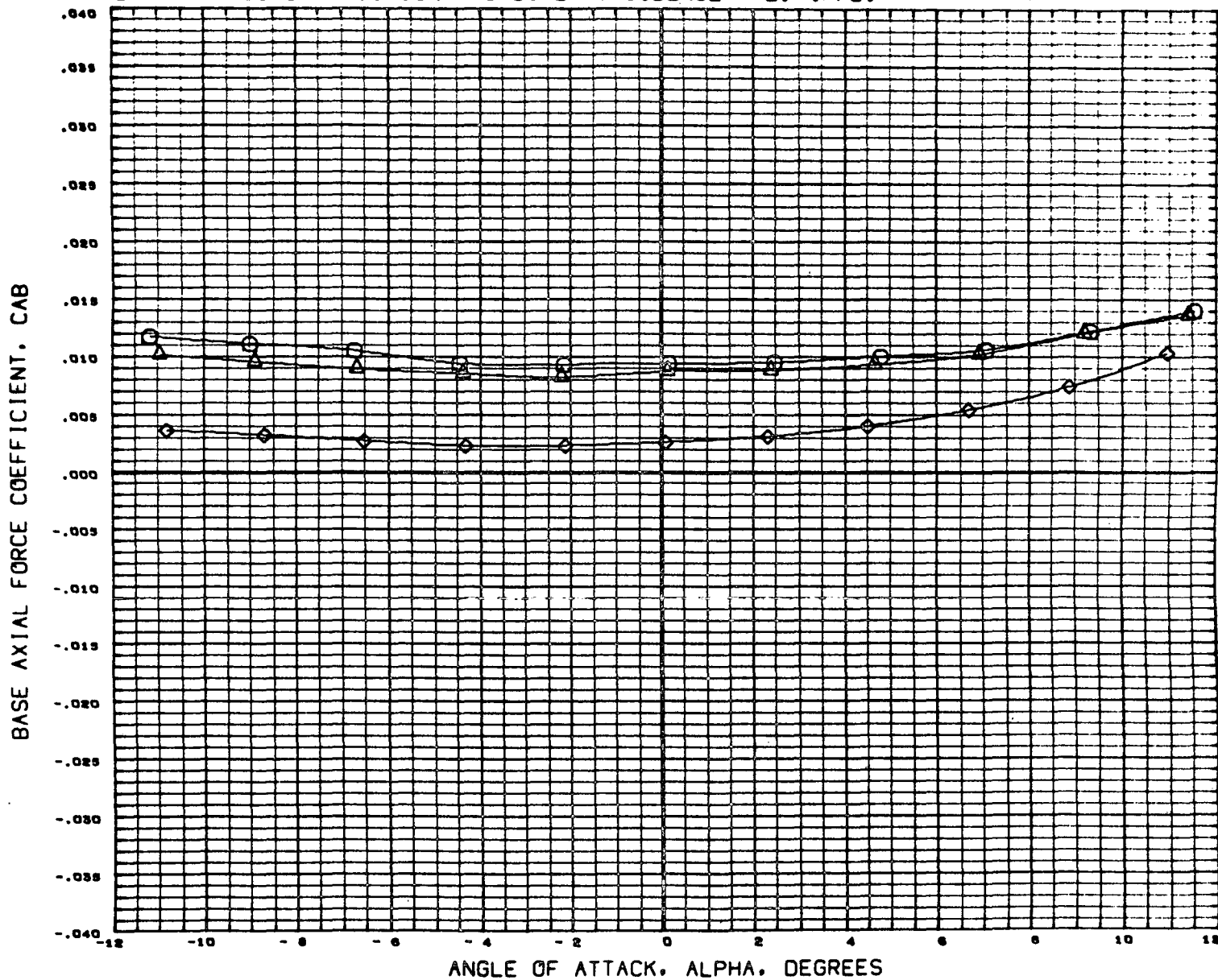


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3236A)	MSPC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	MSPC490 NR/GD LAUNCH B20Z4BW14V8+BSW17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSPC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

PAGE 181

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

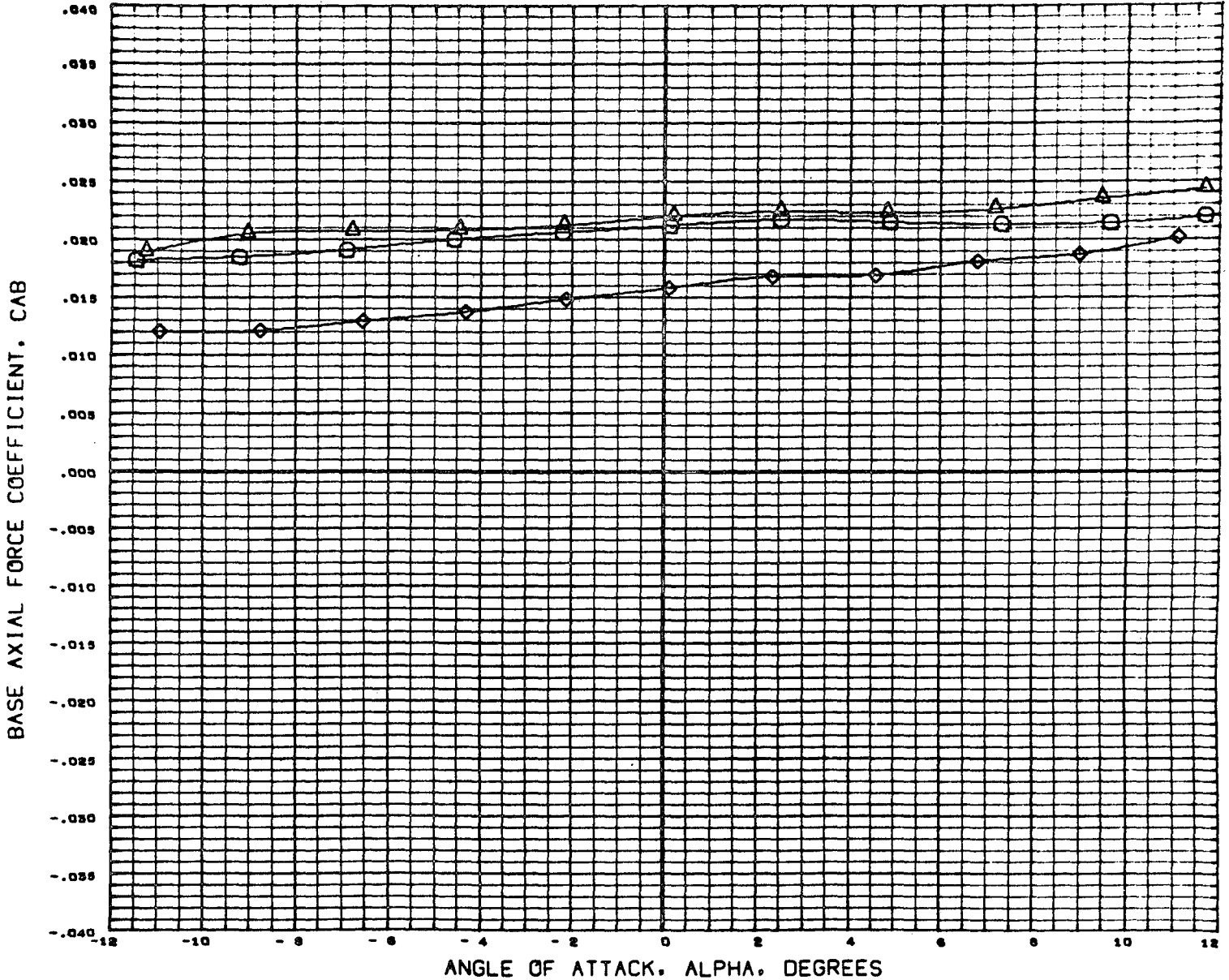


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B20Z4BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

PAGE 182

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

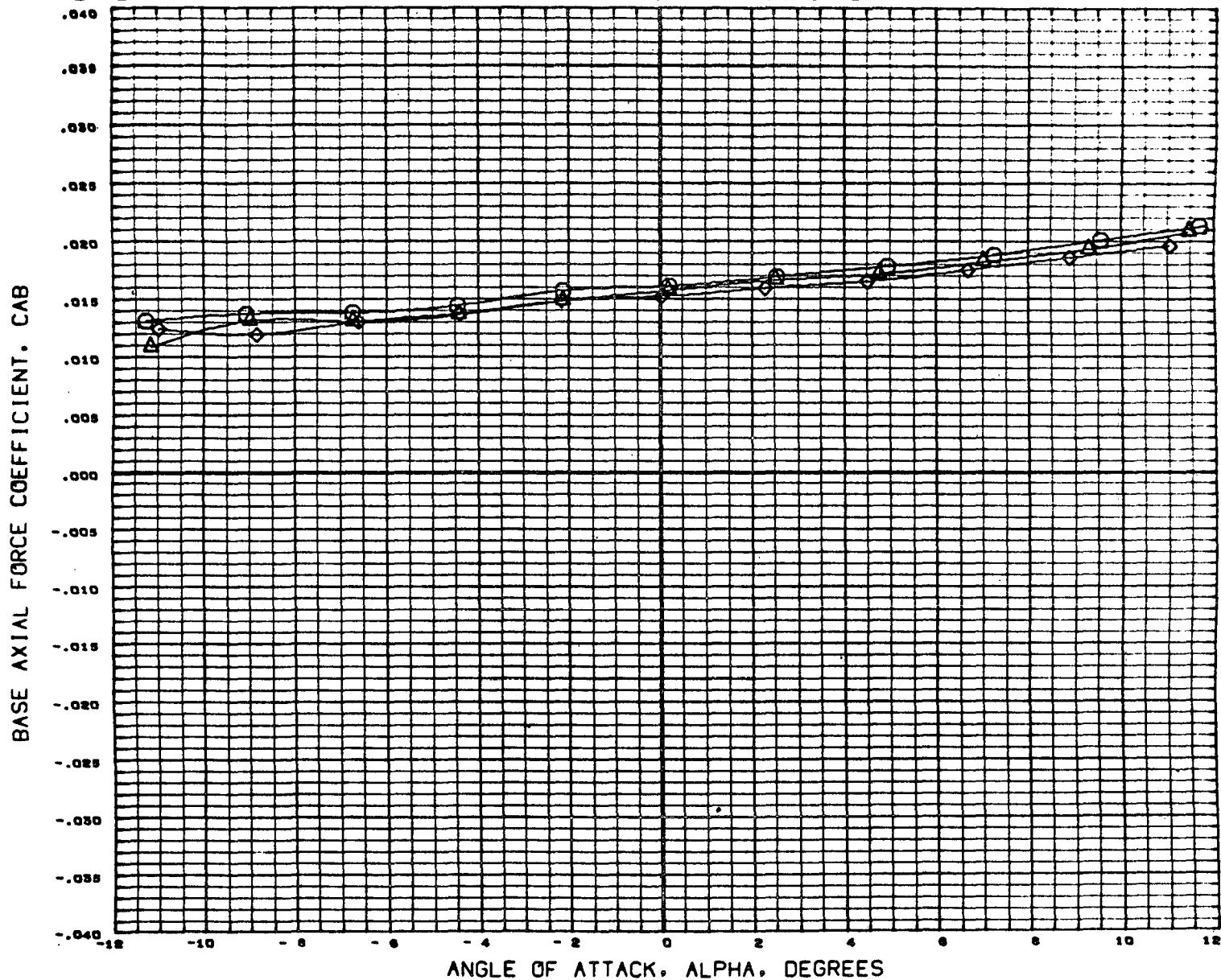


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3238A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B20248W14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

PAGE 183

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

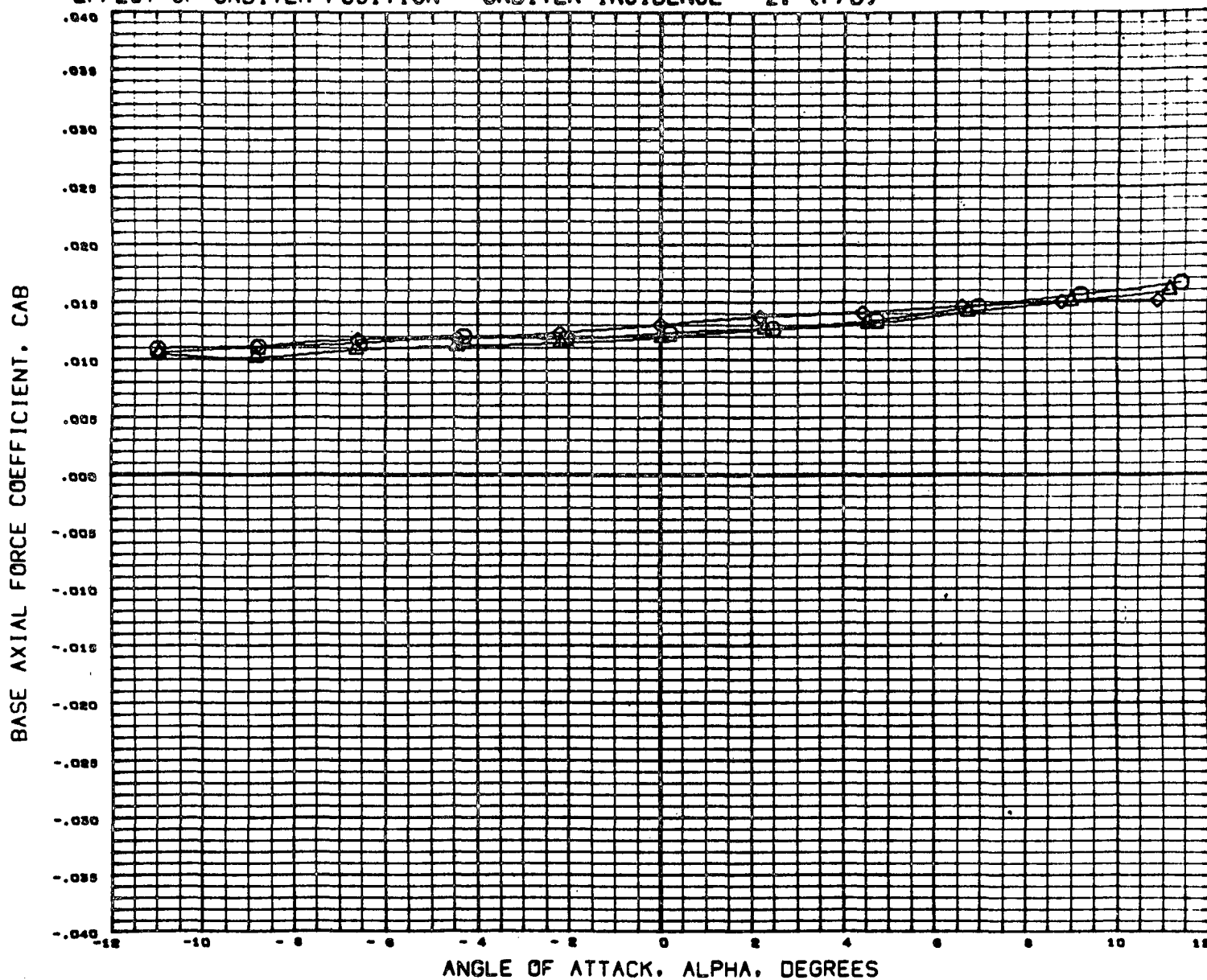


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3238A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 30 IN
(H3239A)	MSFC490 NR/GD LAUNCH B20Z4BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.47

PAGE 184

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

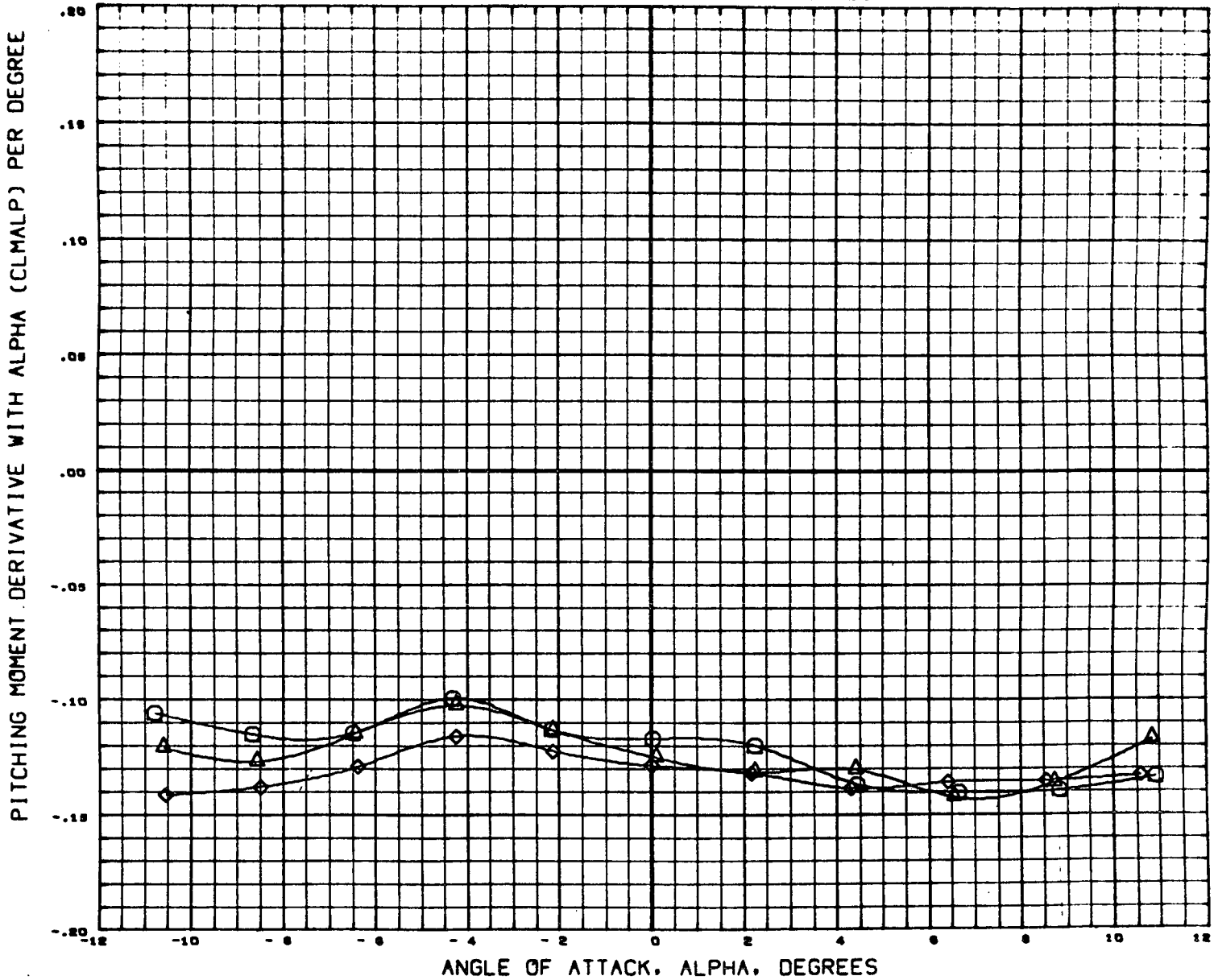


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3239A)	MSFC490 NR/GD LAUNCH B2024BW14V6+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0055 SCALE

MACH 1.96

PAGE 185

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

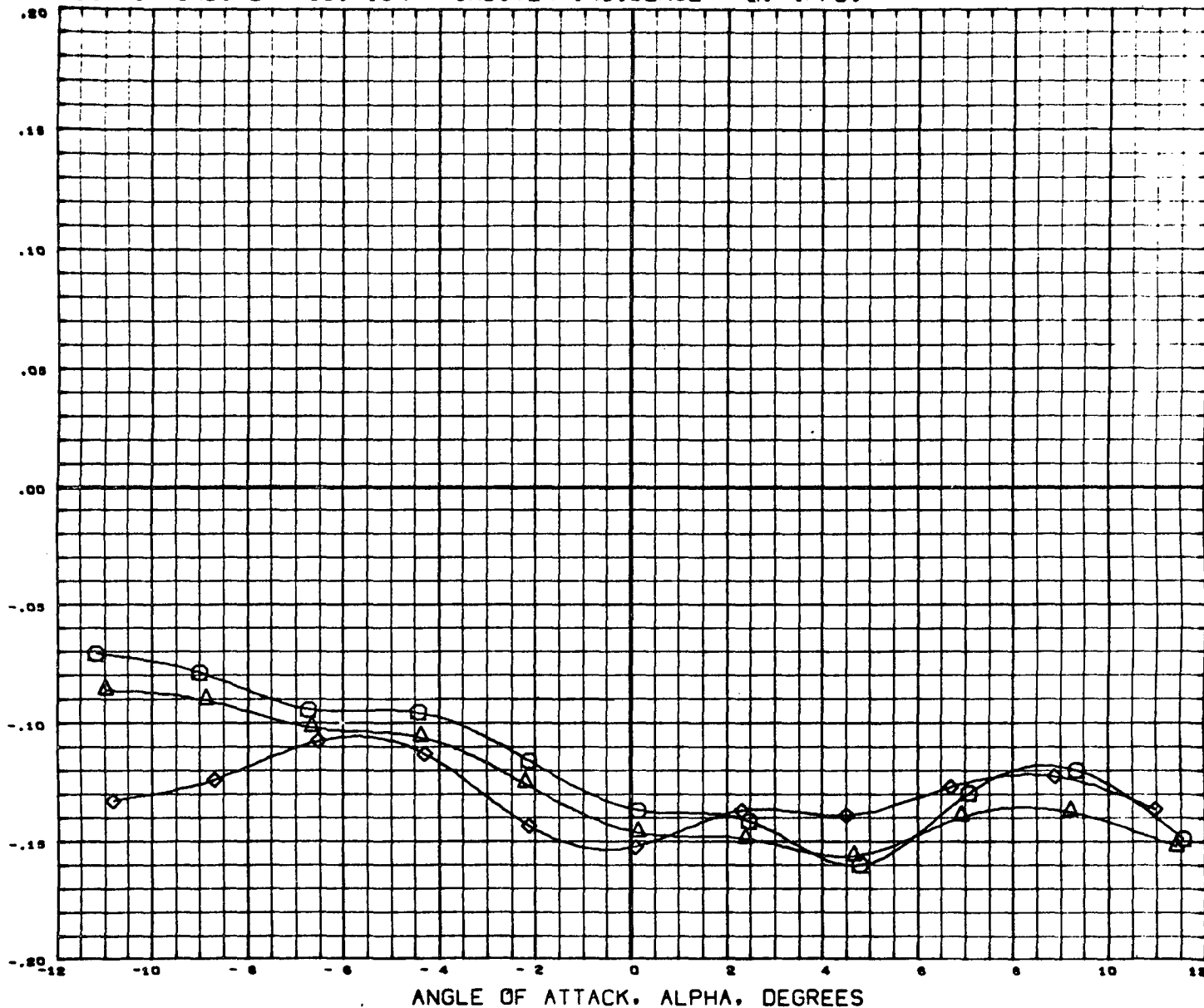


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13236A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B3W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V6+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B3W17V17	2.000	3.000	0.000	0.000	SREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE

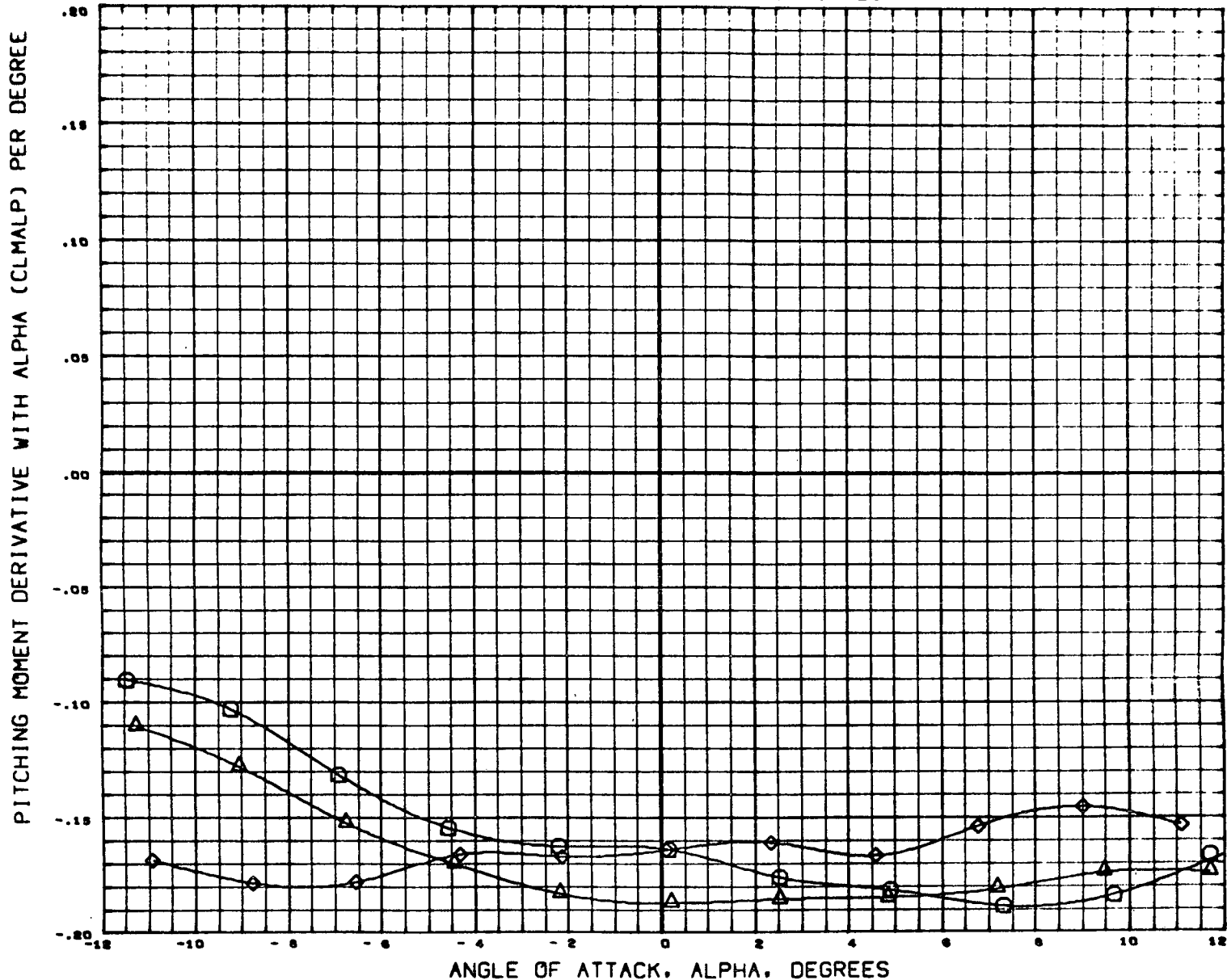


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)



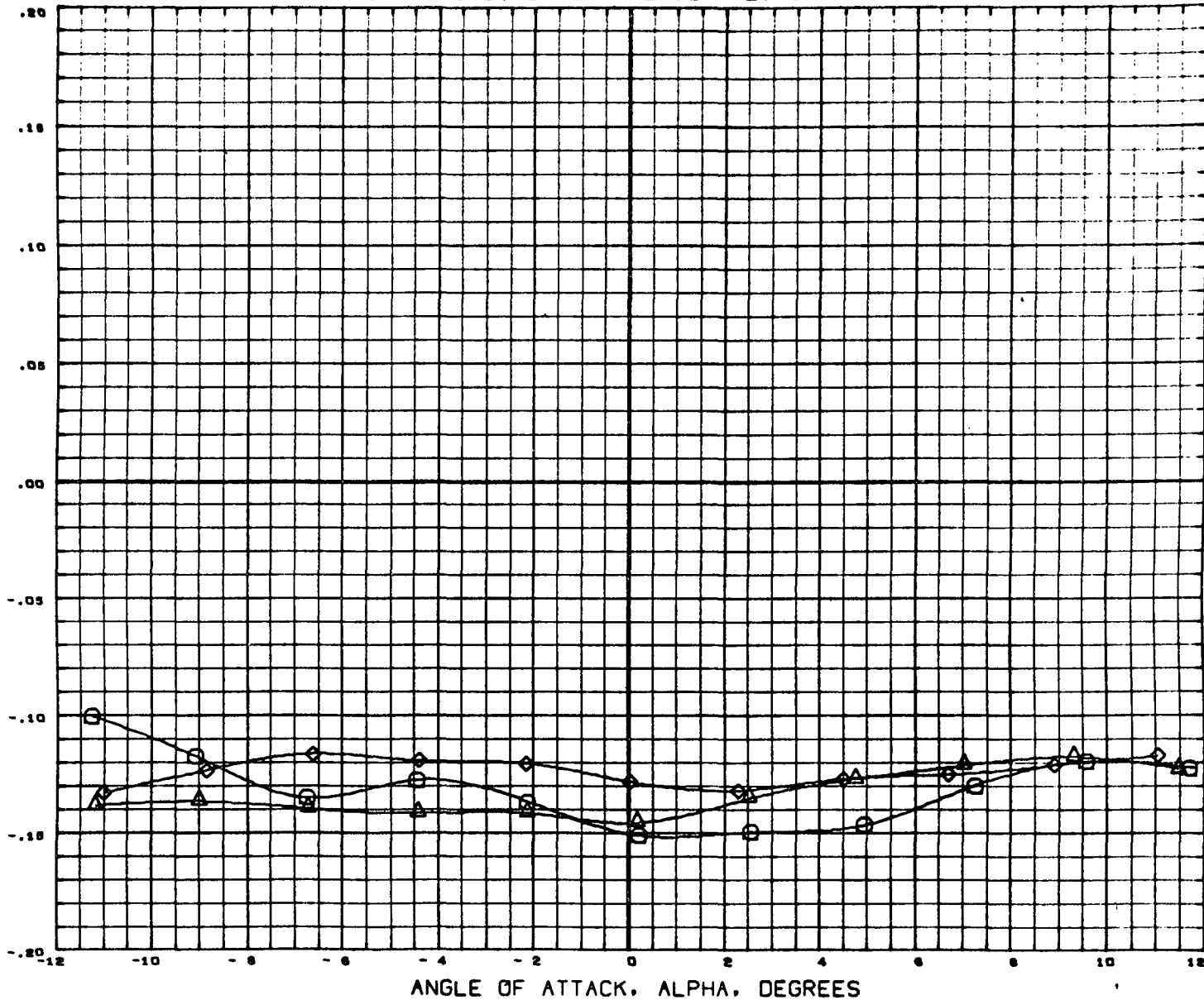
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0990	INCHES
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.10

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

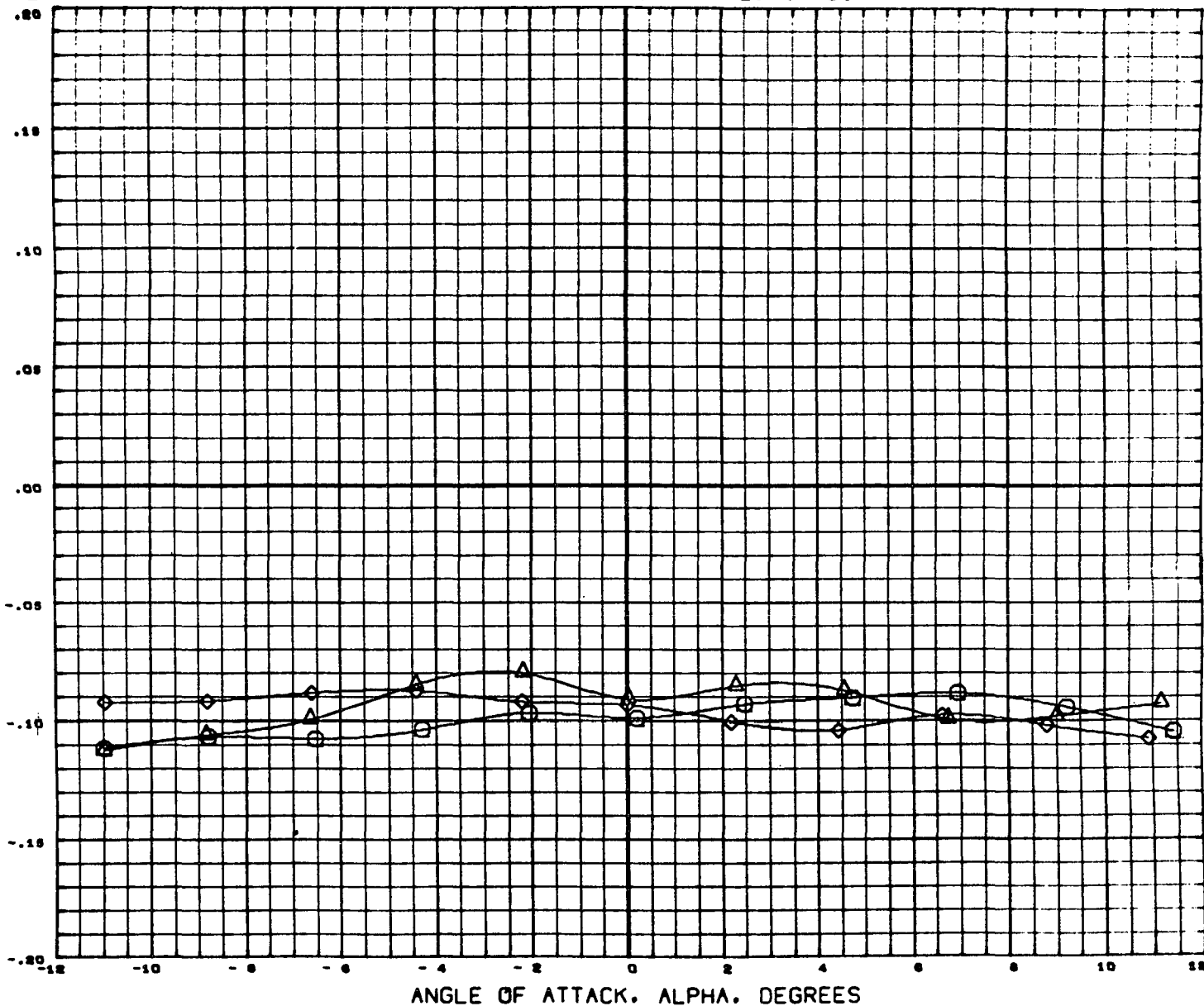
MACH

1.47

PAGE 189

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE

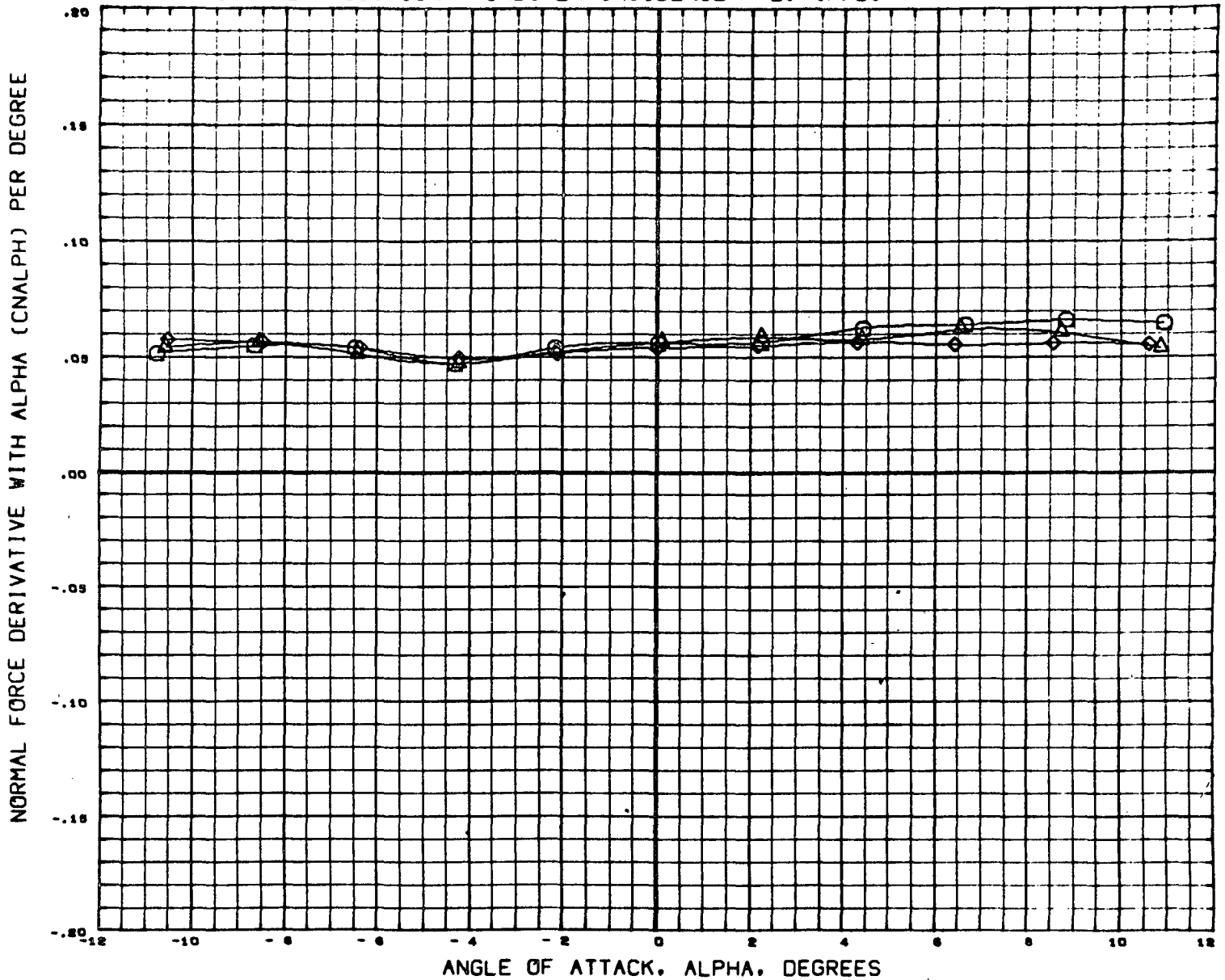


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13236A)	MSPC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSPC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13243A)	MSPC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

PAGE 190

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

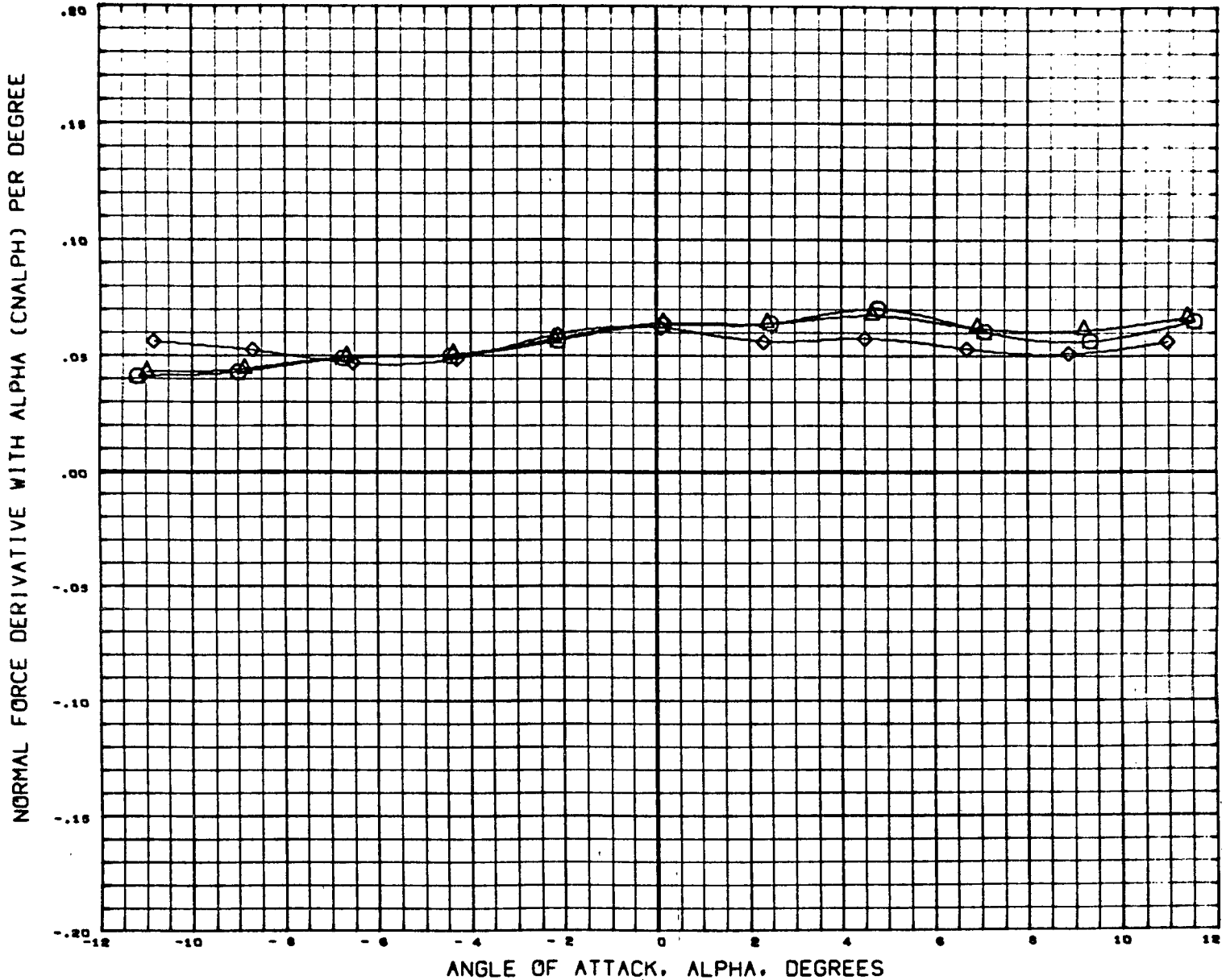


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13236A)	MSFC490 NR/GD LAUNCH 820C48W14V6+85W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSFC490 NR/GD LAUNCH 820248W14V6+85W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13243A)	MSFC490 NR/GD LAUNCH 820C48W14V6+85W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)



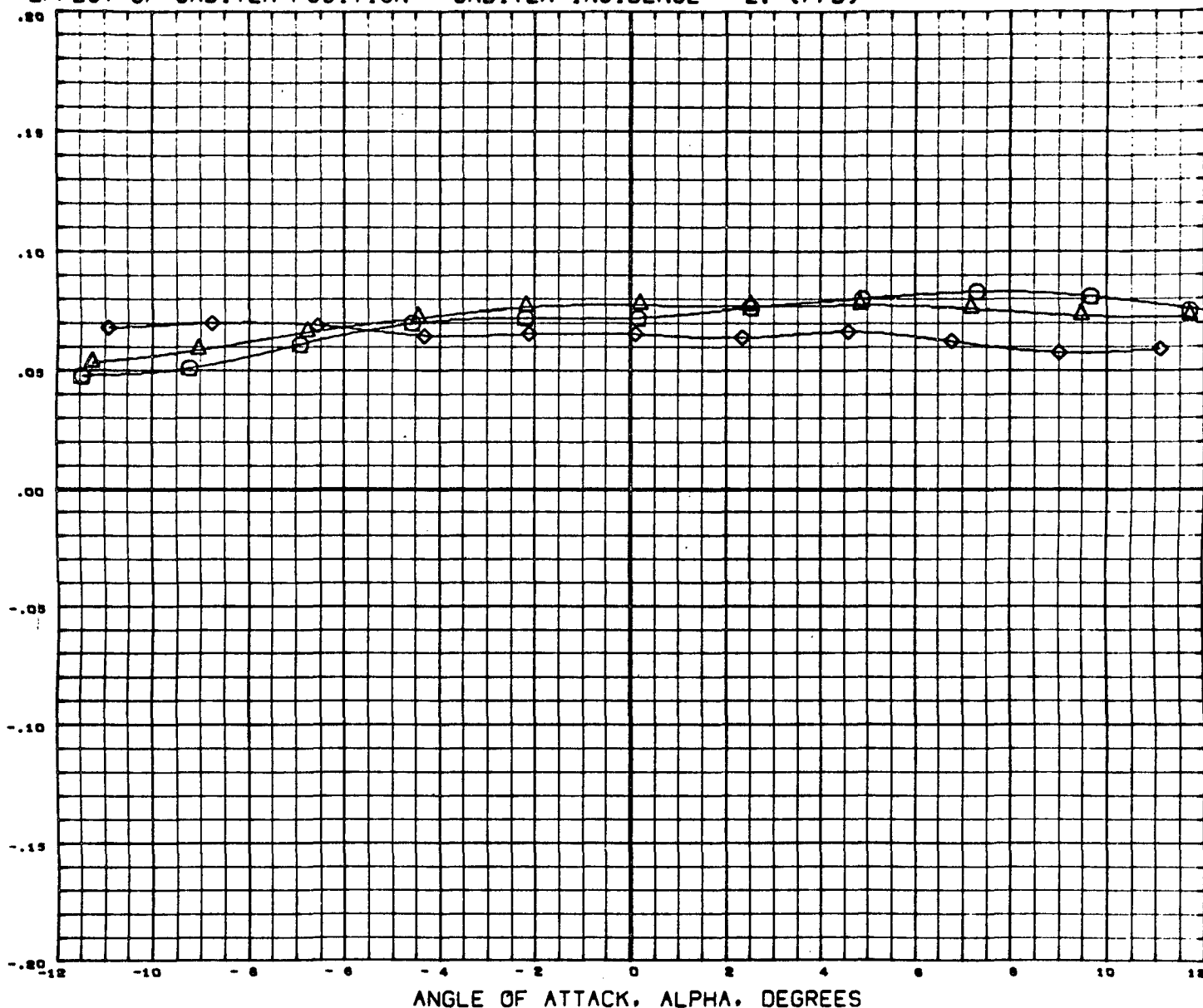
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.8360	30 IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0930	INCHES
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



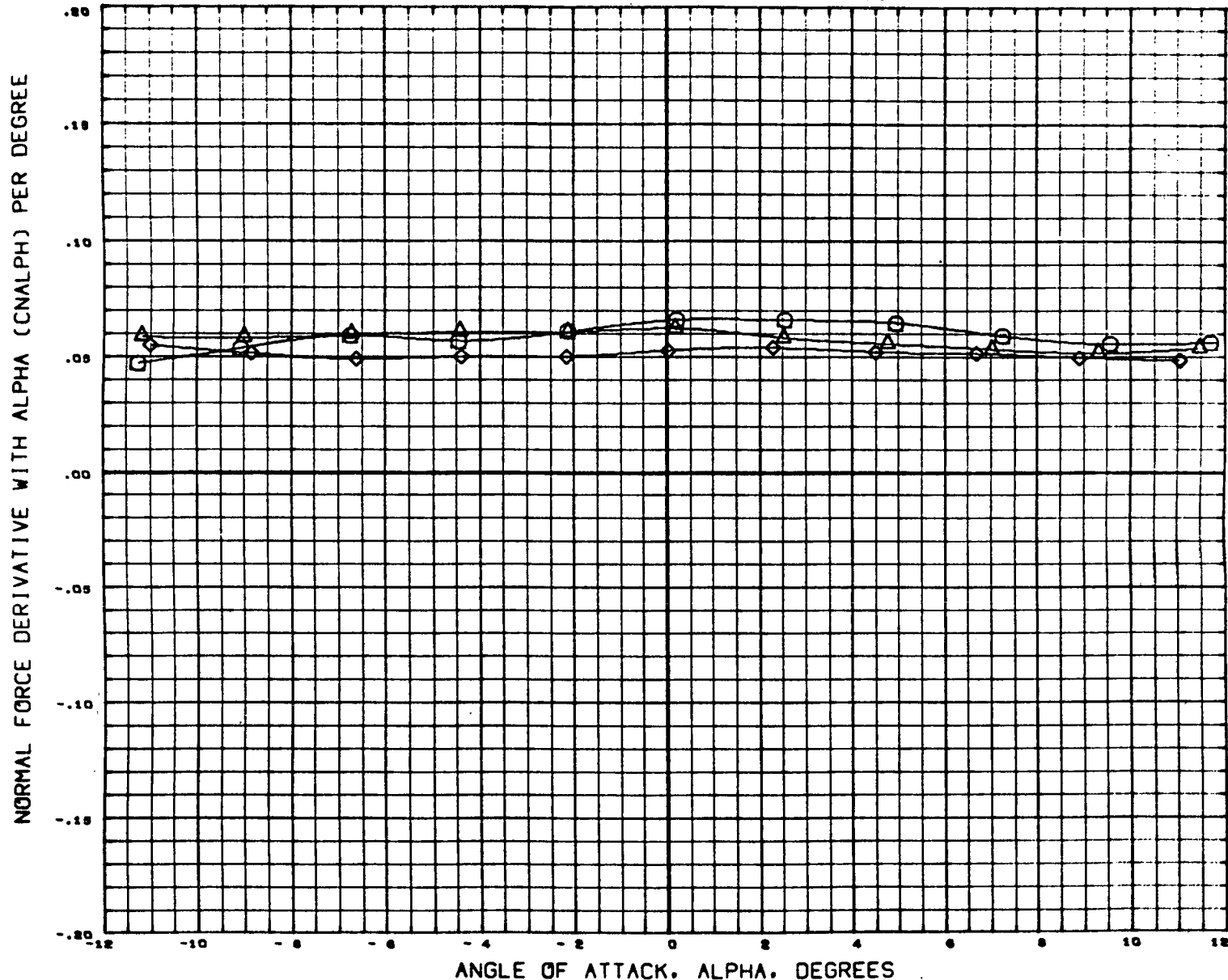
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSFC490 NR/GD LAUNCH B20Z4BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRF	0.0000
						YMRF	0.0000
						ZMRF	0.0000
						SCALE	0.0035 SCALE

MACH

1.10

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)



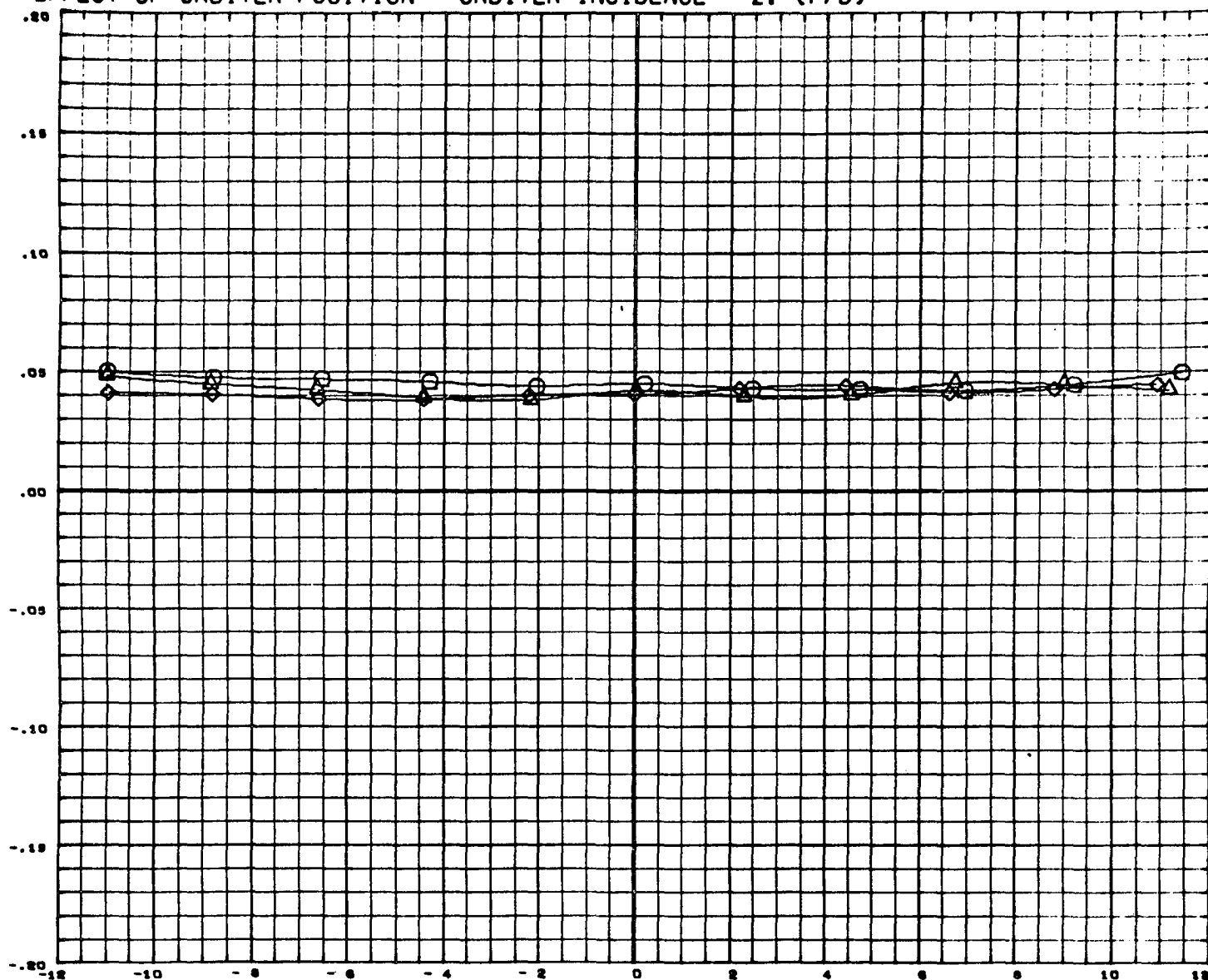
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13236A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	2.000	1.000	0.000	0.000	SREF	15.6560	30 IN
(13239A)	MSFC490 NR/GD LAUNCH B20248W14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(13243A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XWRP	0.0000	
						YWRP	0.0000	
						ZWRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B)

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B3W17V17	2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

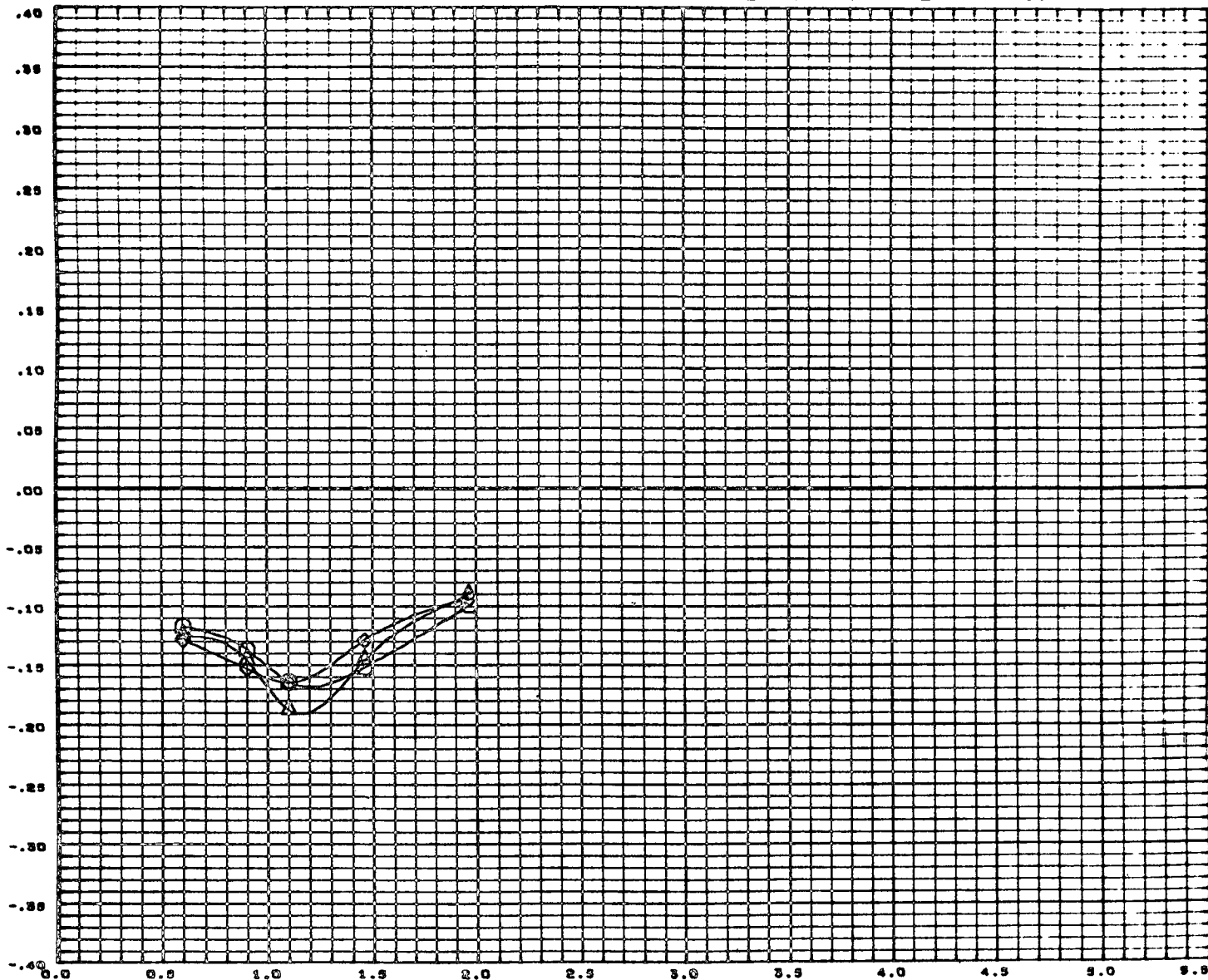
MACH

1.96

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B) ALPHA = 0.

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



MACH NUMBER

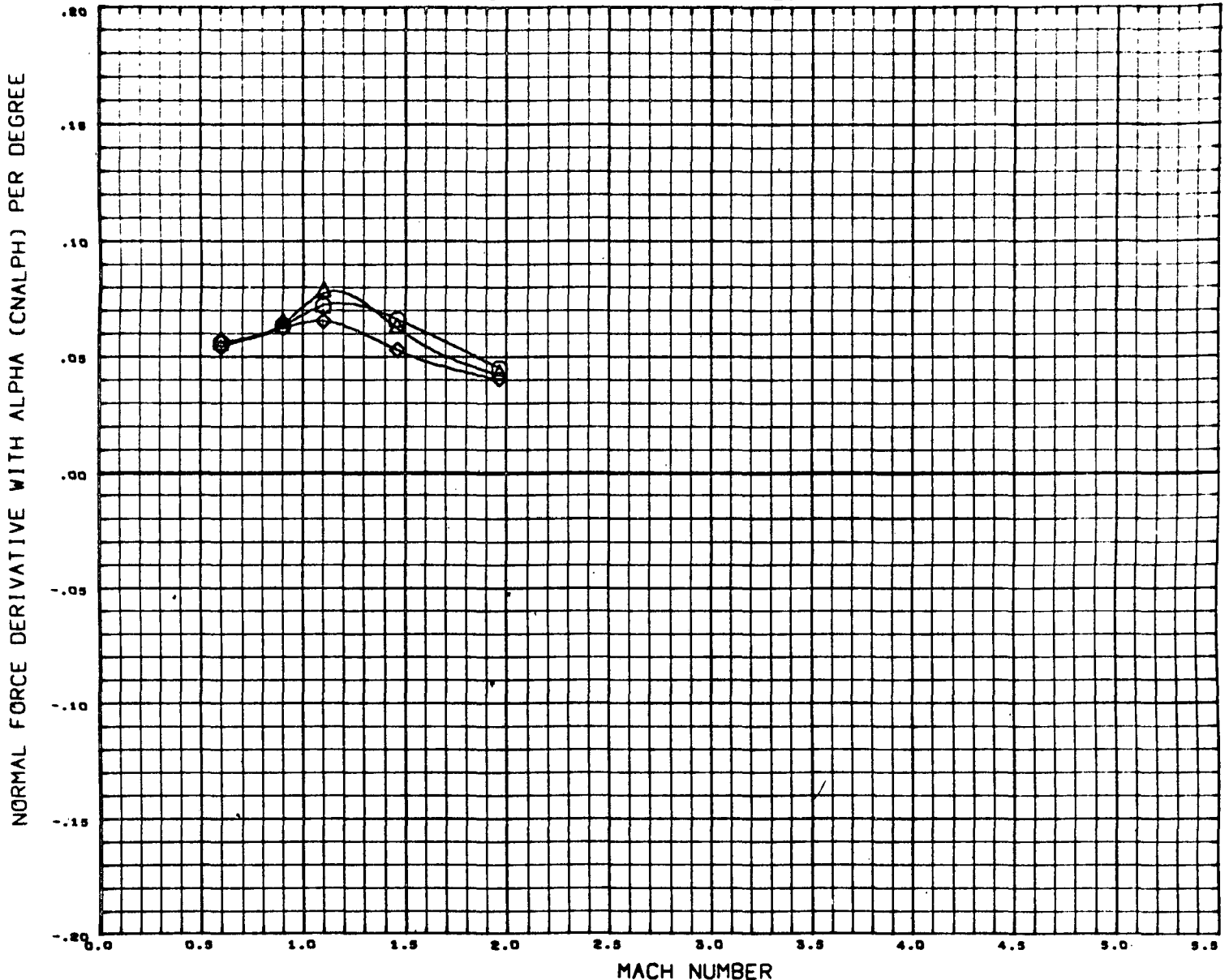
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17
(J3239A)	MSFC490 NR/GD LAUNCH B2024BW14V6+B5W17V17
(J3243A)	MSFC400 NR/GD LAUNCH B20C4BW14V6+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
2.000	1.000	0.000	0.000	SREF	15.6560 30 IN
2.000	2.000	0.000	0.000	LREF	3.0950 INCHES
2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B) ALPHA = 0.

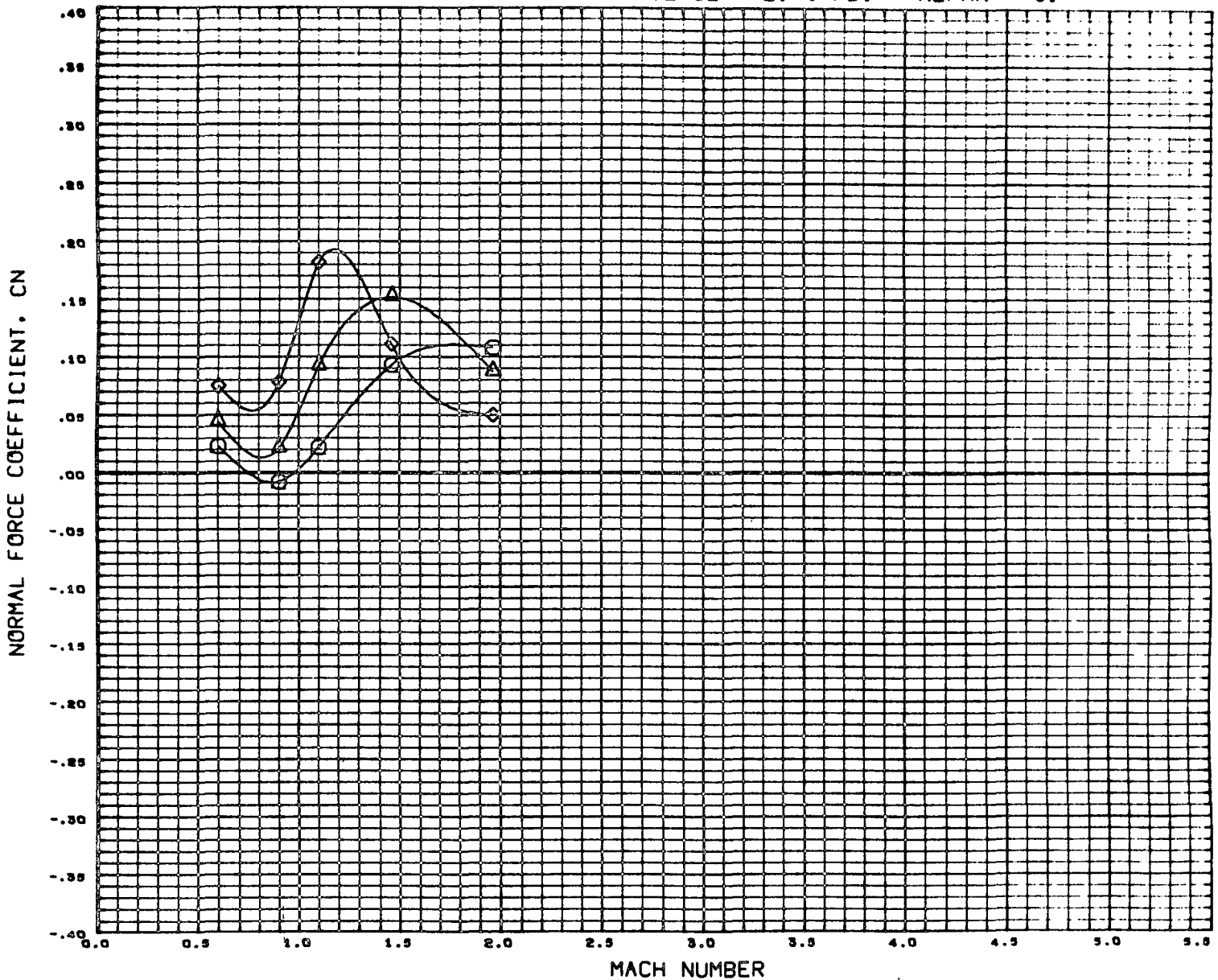


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(J3236A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(J3239A)	MSFC490 NR/GD LAUNCH B20248W14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(J3243A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0039 SCALE

ALPHA .00

PAGE 197

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B) ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8-B3W17V17
(K3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8-B3W17V17
(K3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8-B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
2.000	1.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	2.000	0.000	0.000	LREF 3.0950 INCHES
2.000	3.000	0.000	0.000	BREF 0.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0033 SCALE

ALPHA .00

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B) ALPHA = 0.

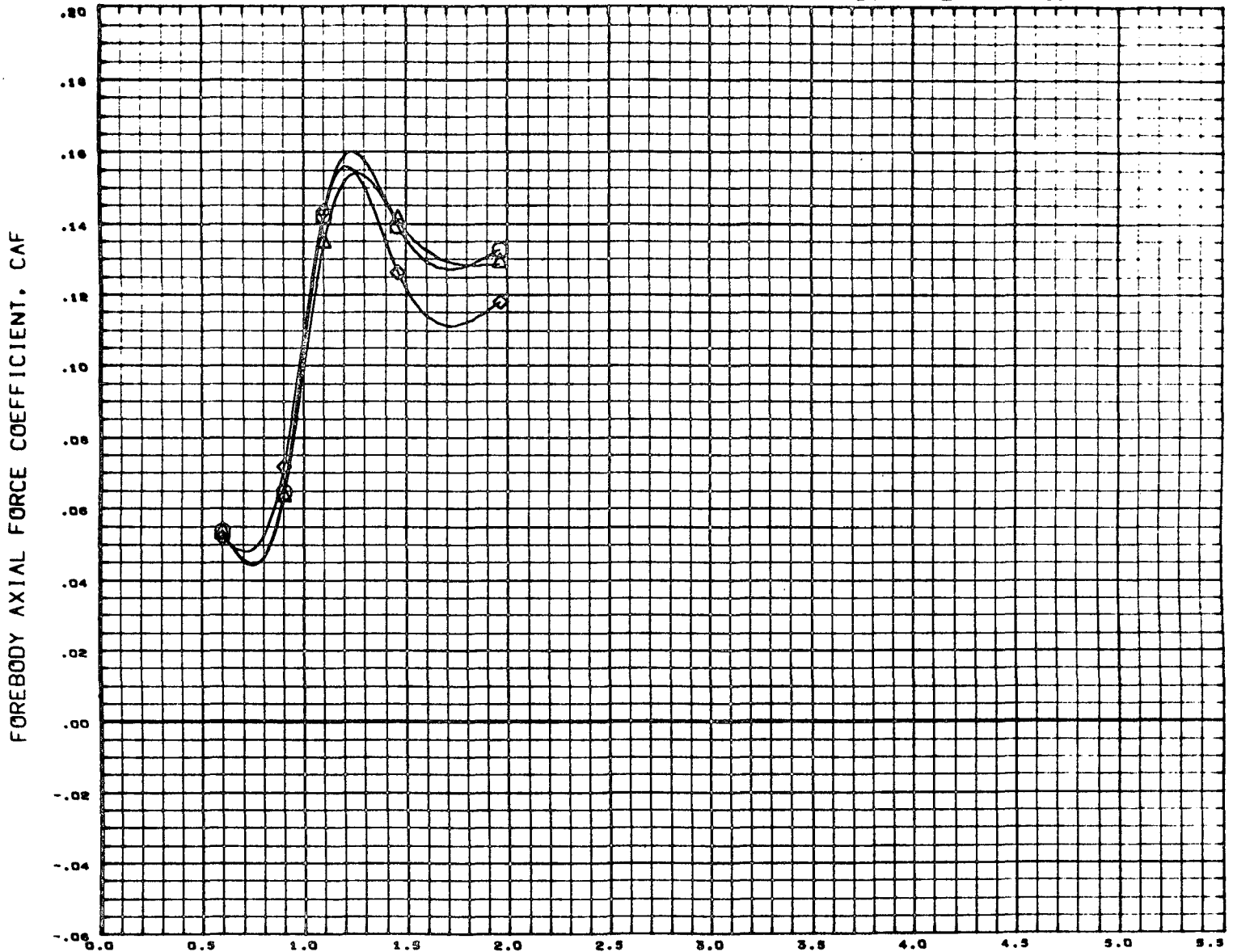


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(K3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	1.000	0.000	0.000	SREF	15.6560	30 IN
(K3239A)	MSFC490 NR/GD LAUNCH B2024BW14V8+B5W17V17	2.000	2.000	0.000	0.000	LREF	3.0980	INCHES
(K3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	2.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

ALPHA .00

PAGE 199

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 2. (P/B) ALPHA = 0.



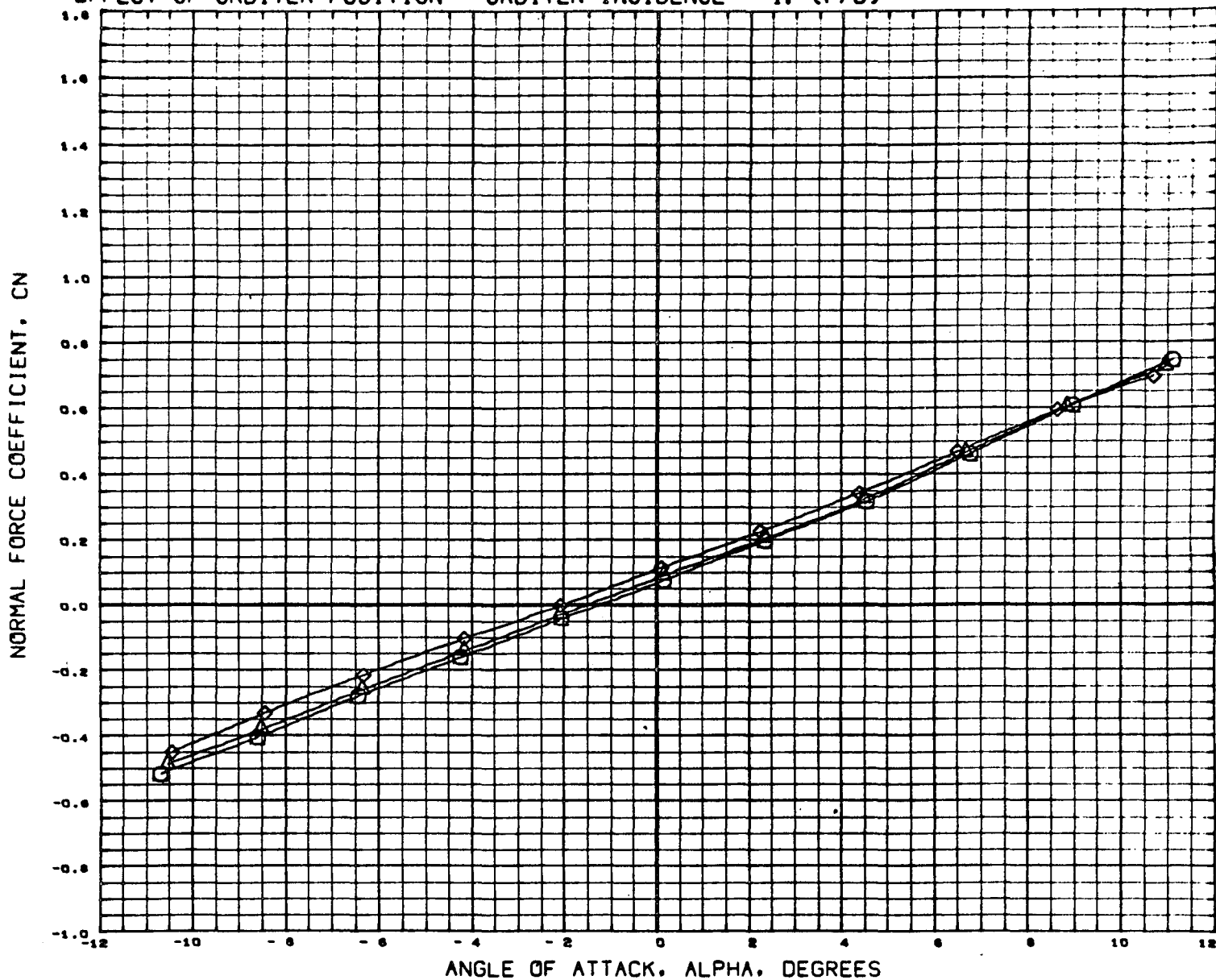
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K3236A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(K3239A)	MSFC490 NR/GD LAUNCH B20Z4BW14V8+B3W17V17
(K3243A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

MACH NUMBER

ORBINC	POSITN	BETA	ZLVATR	REFERENCE INFORMATION
2.000	1.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	2.000	0.000	0.000	LREF 3.0990 INCHES
2.000	3.000	0.000	0.000	BREF 6.0990 INCHES
				XHRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0039 SCALE

ALPHA .00

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

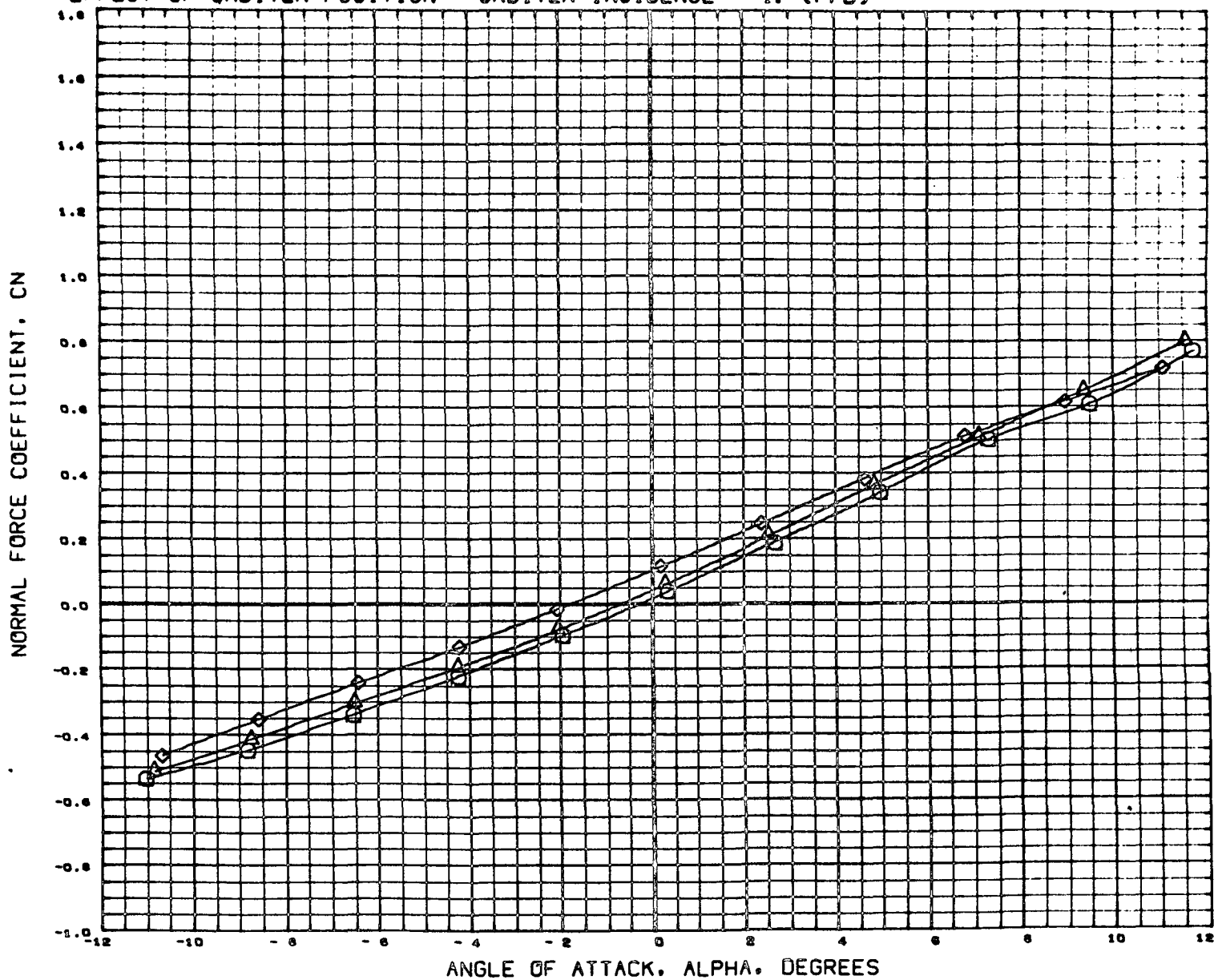


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 50 IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

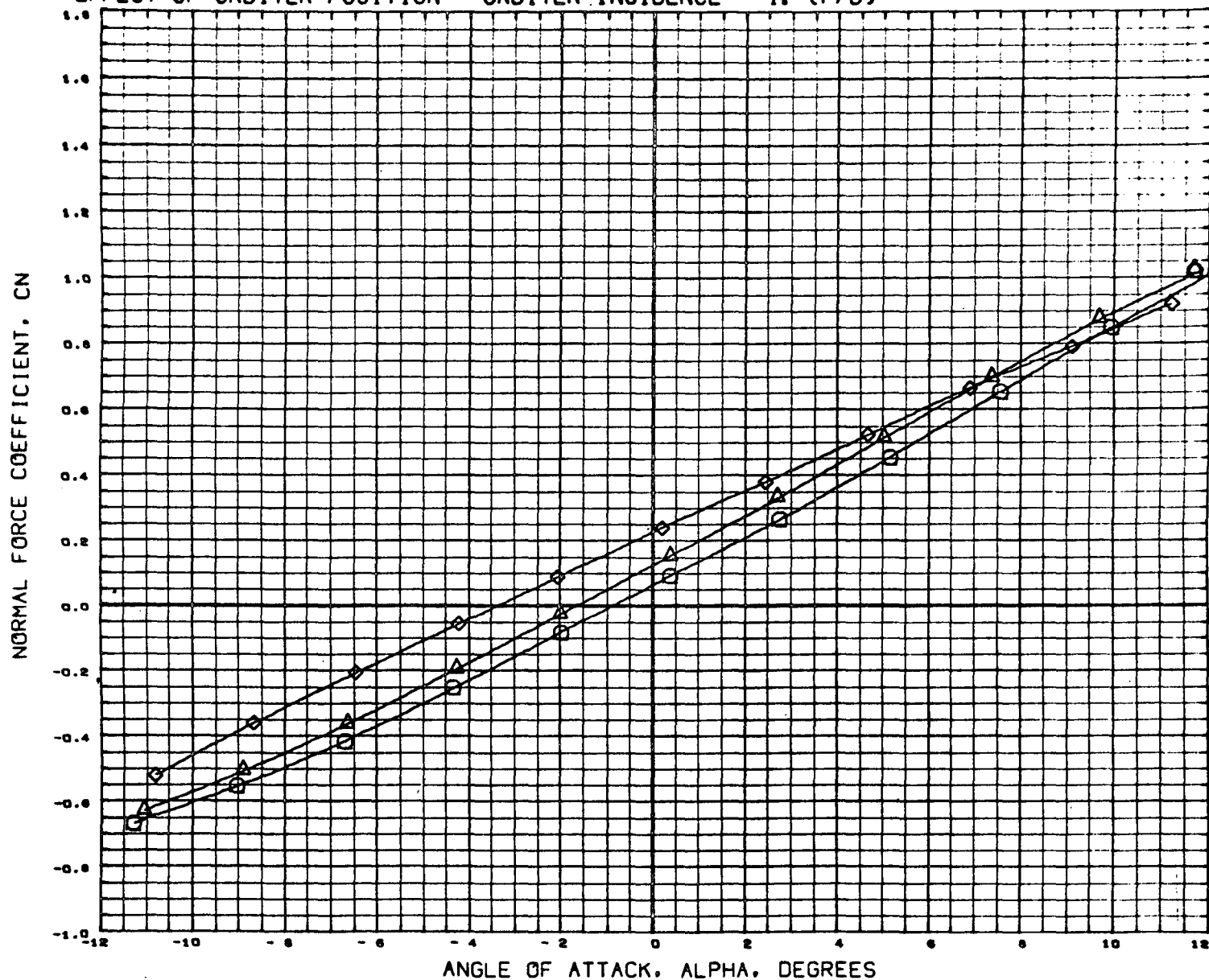


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	HSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17	4.000	1.000	0.000	0.000	SREF	15.6560 50 IN
(H3240A)	HSFC490 NR/GD LAUNCH B2014BW14V8+BSW17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	HSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)



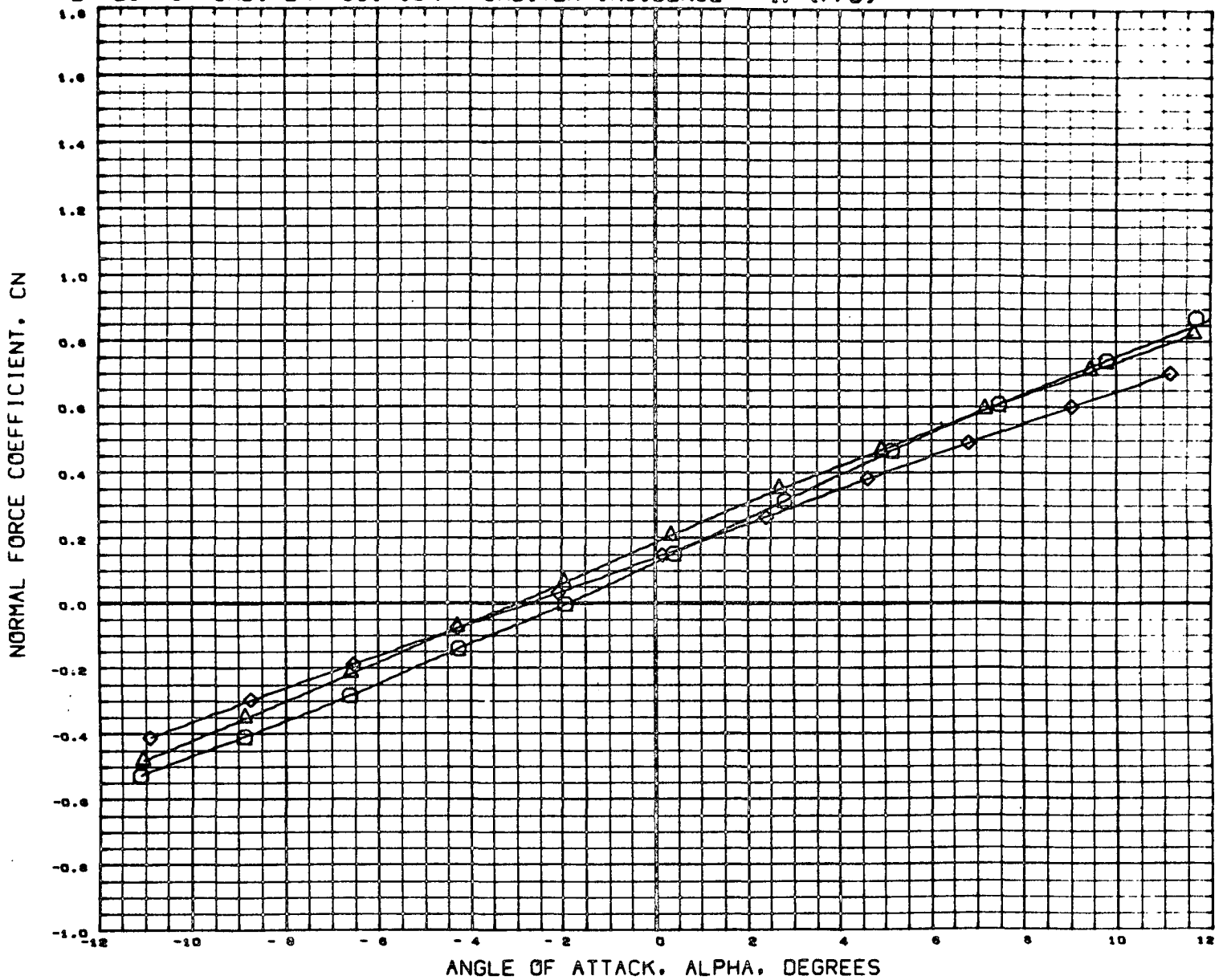
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	19.6560 SQ IN
(H3240A)	MSFC490 NR/GD LAUNCH B2D14BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH

1.09

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

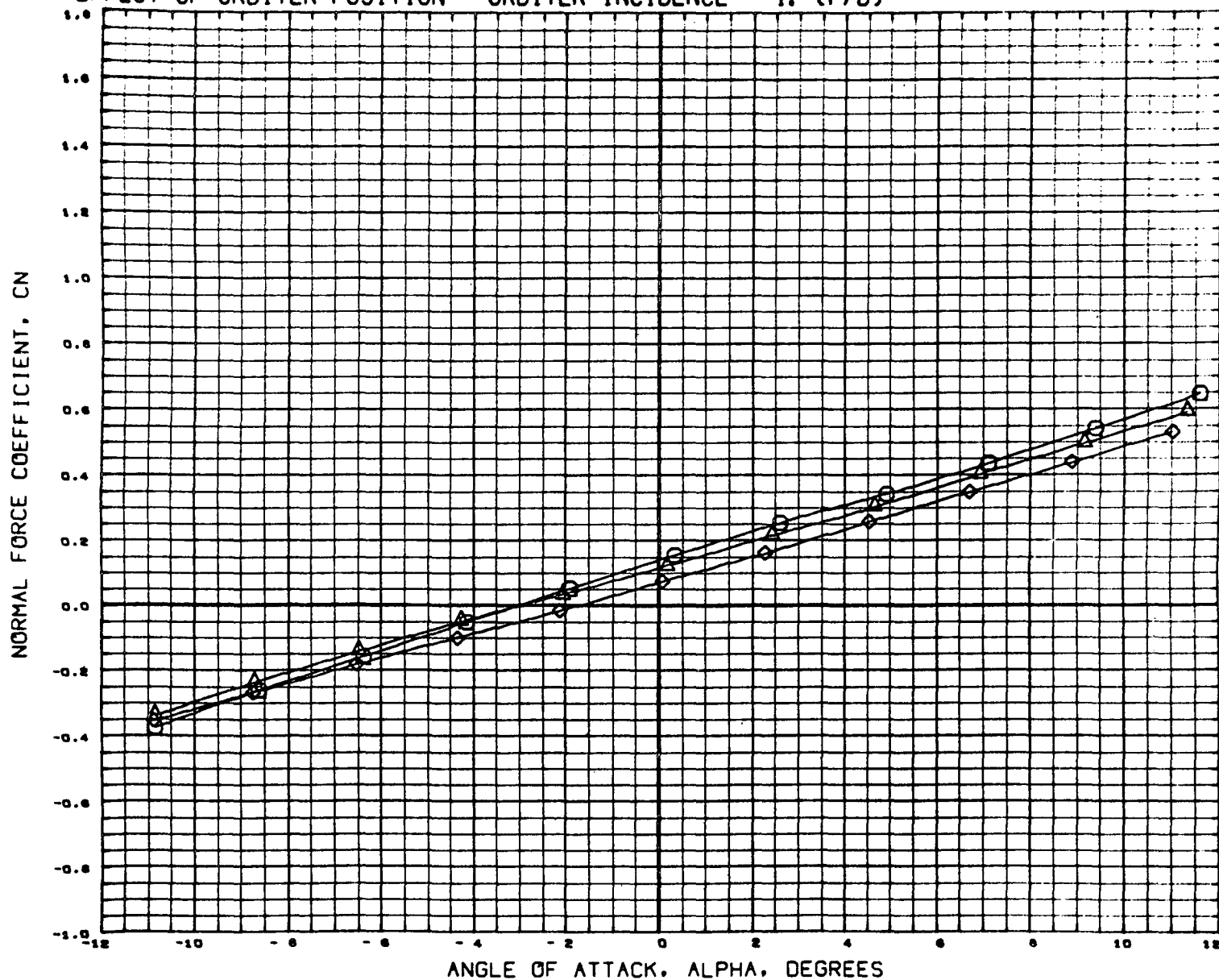


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(H3237A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(H3240A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

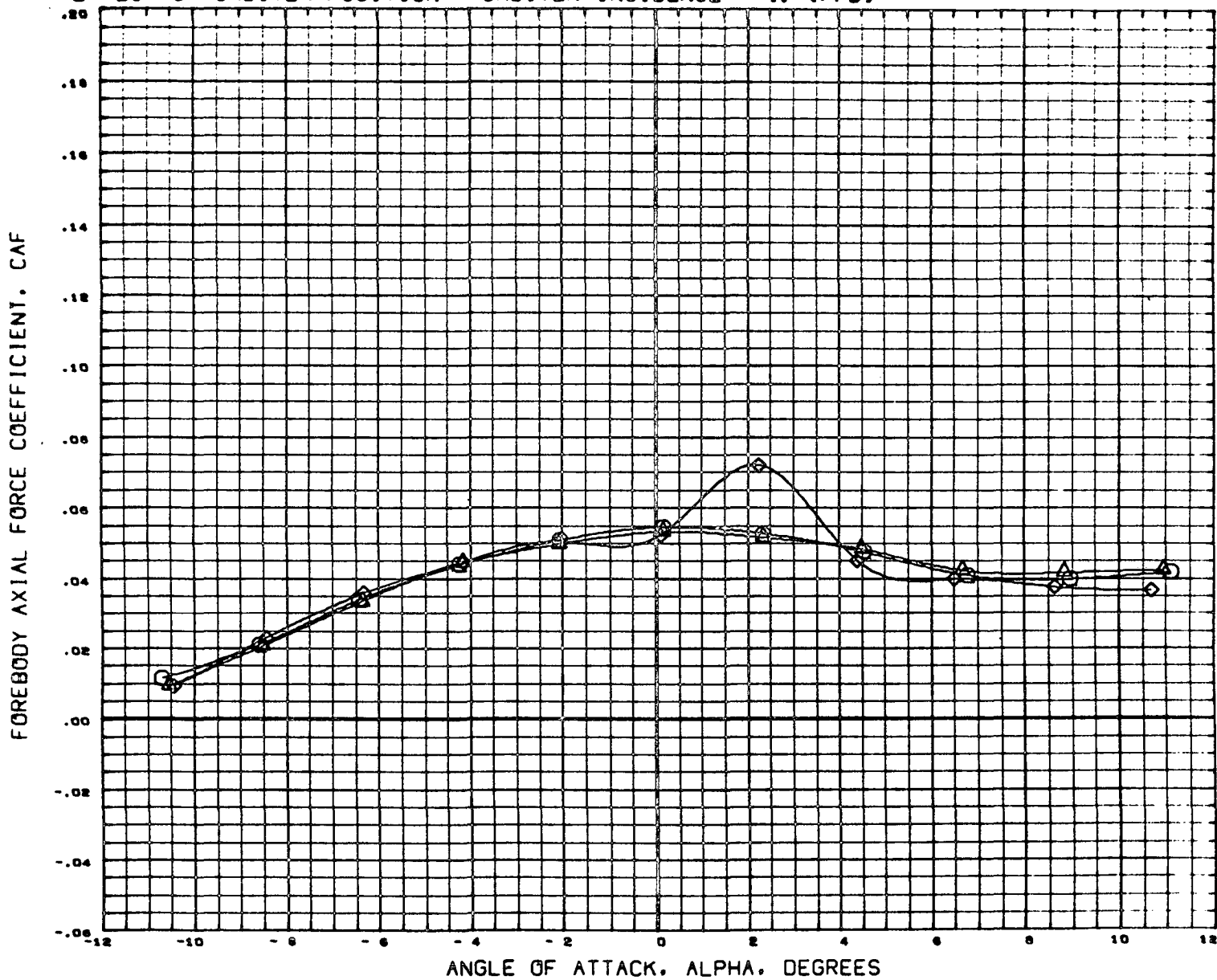


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	19.6560 SQ IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.95

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

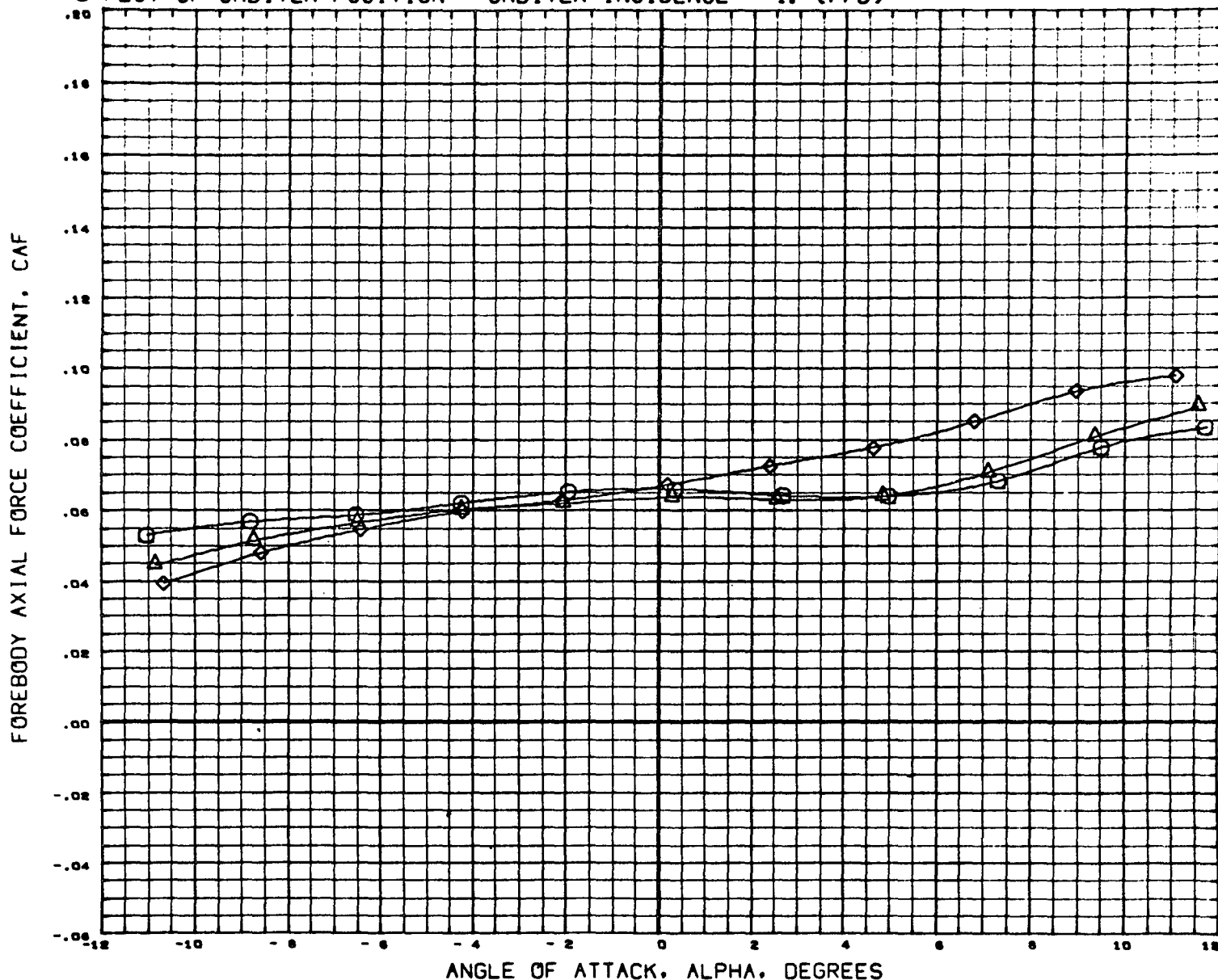


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	HSPC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3240A)	HSPC490 NR/GD LAUNCH B2014BW14V8+B3W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	HSPC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

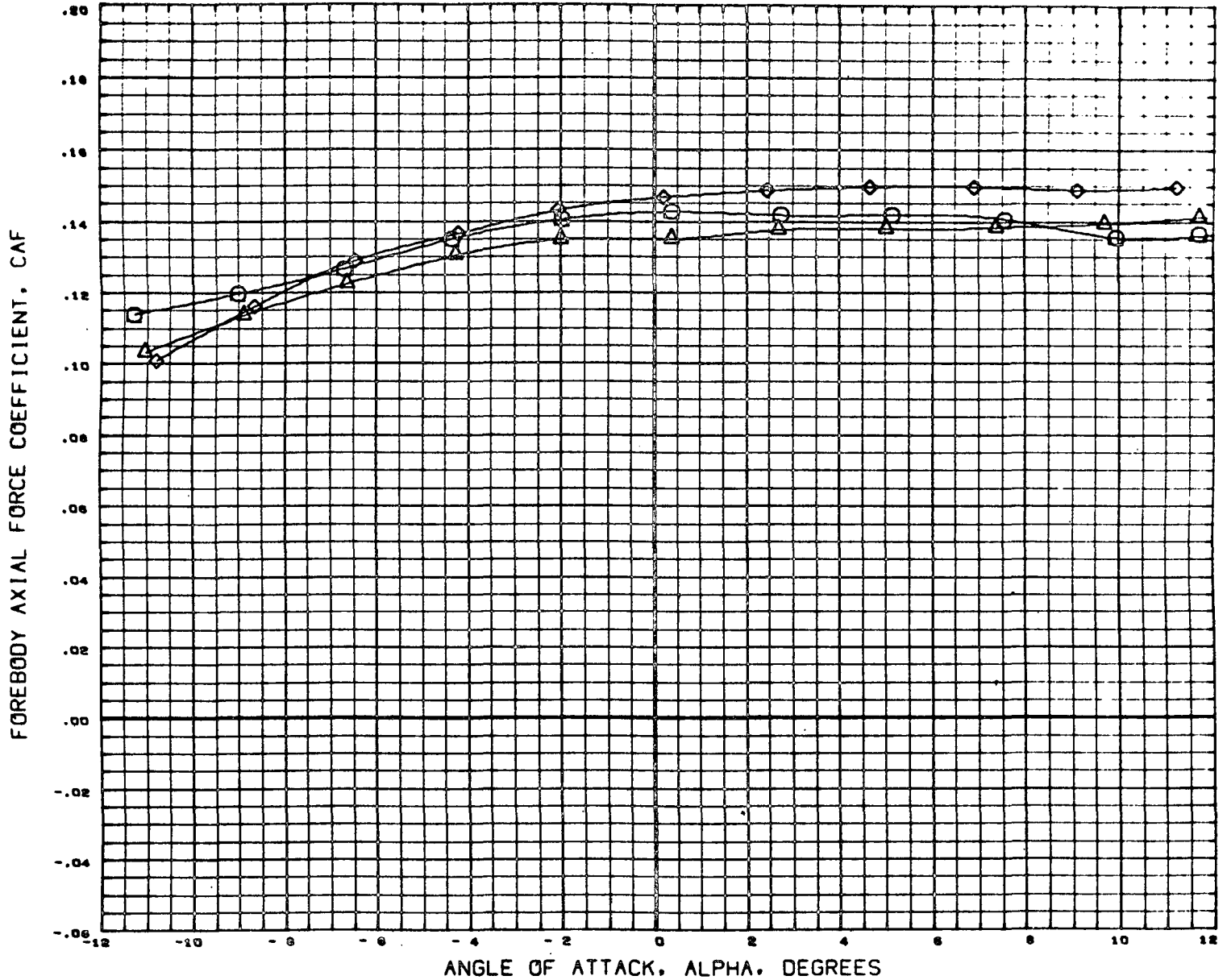


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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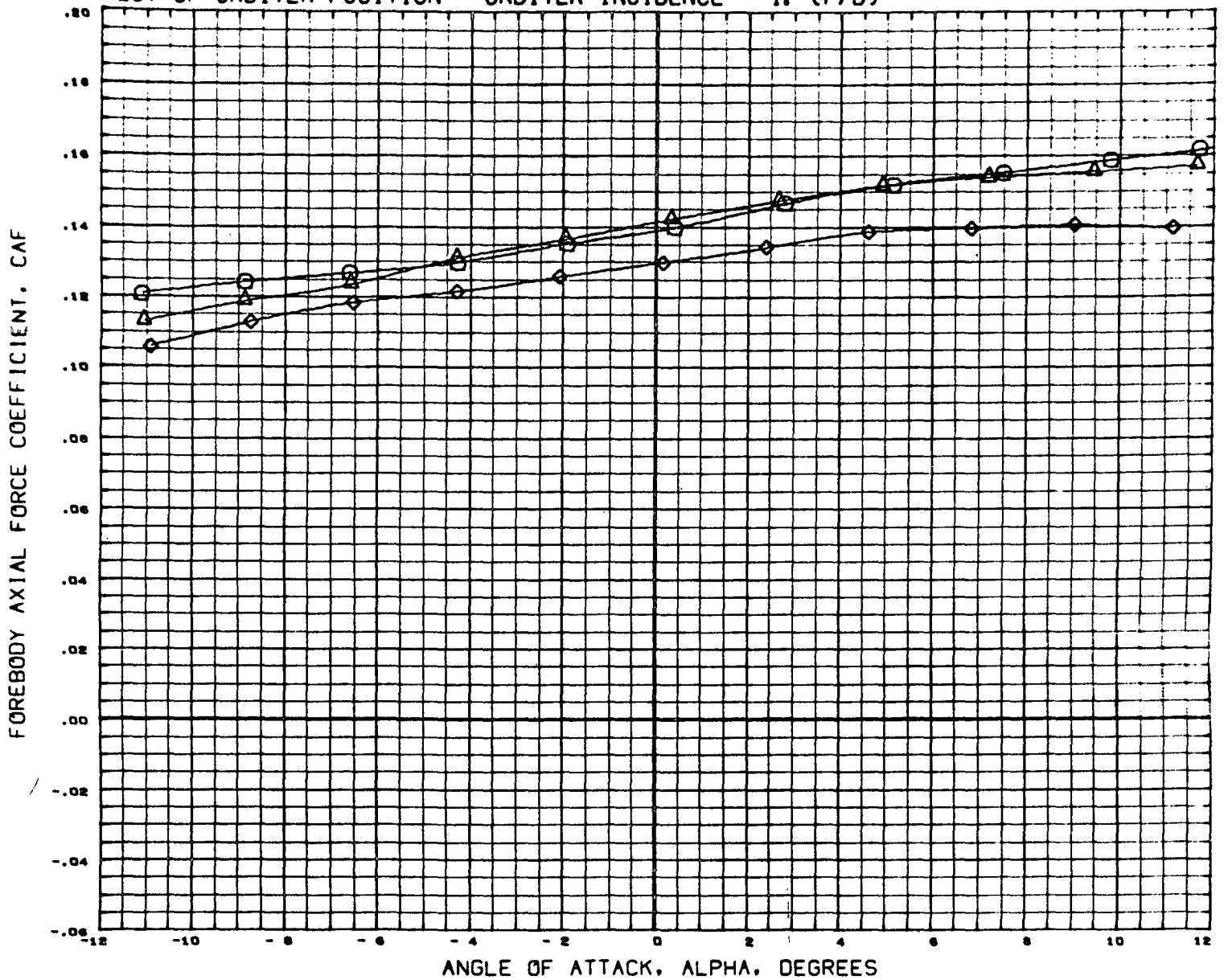
EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	19.6560 SQ IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.09

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

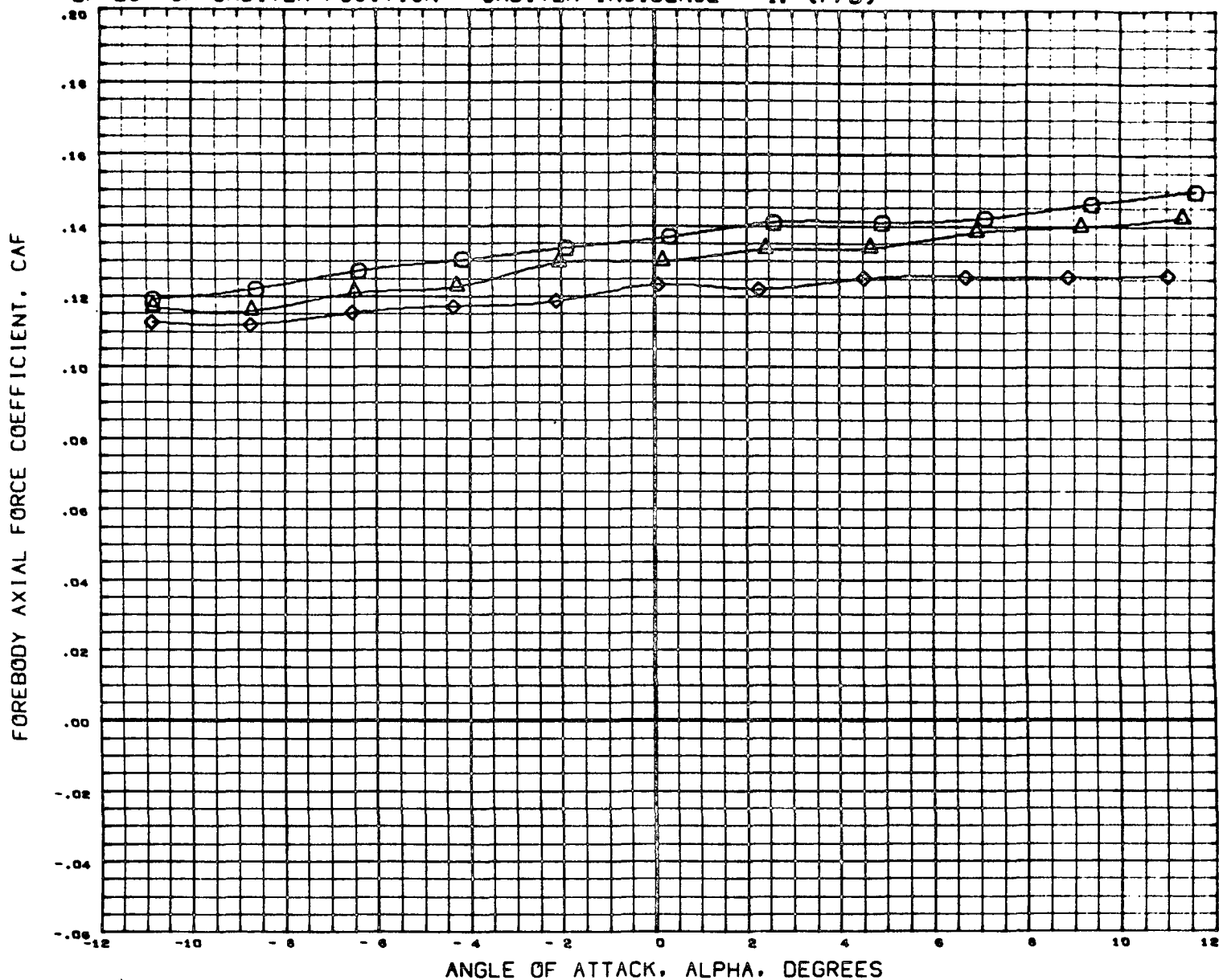


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6580 SQ IN
(H3240A)	MSFC490 NR/GD LAUNCH 82014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

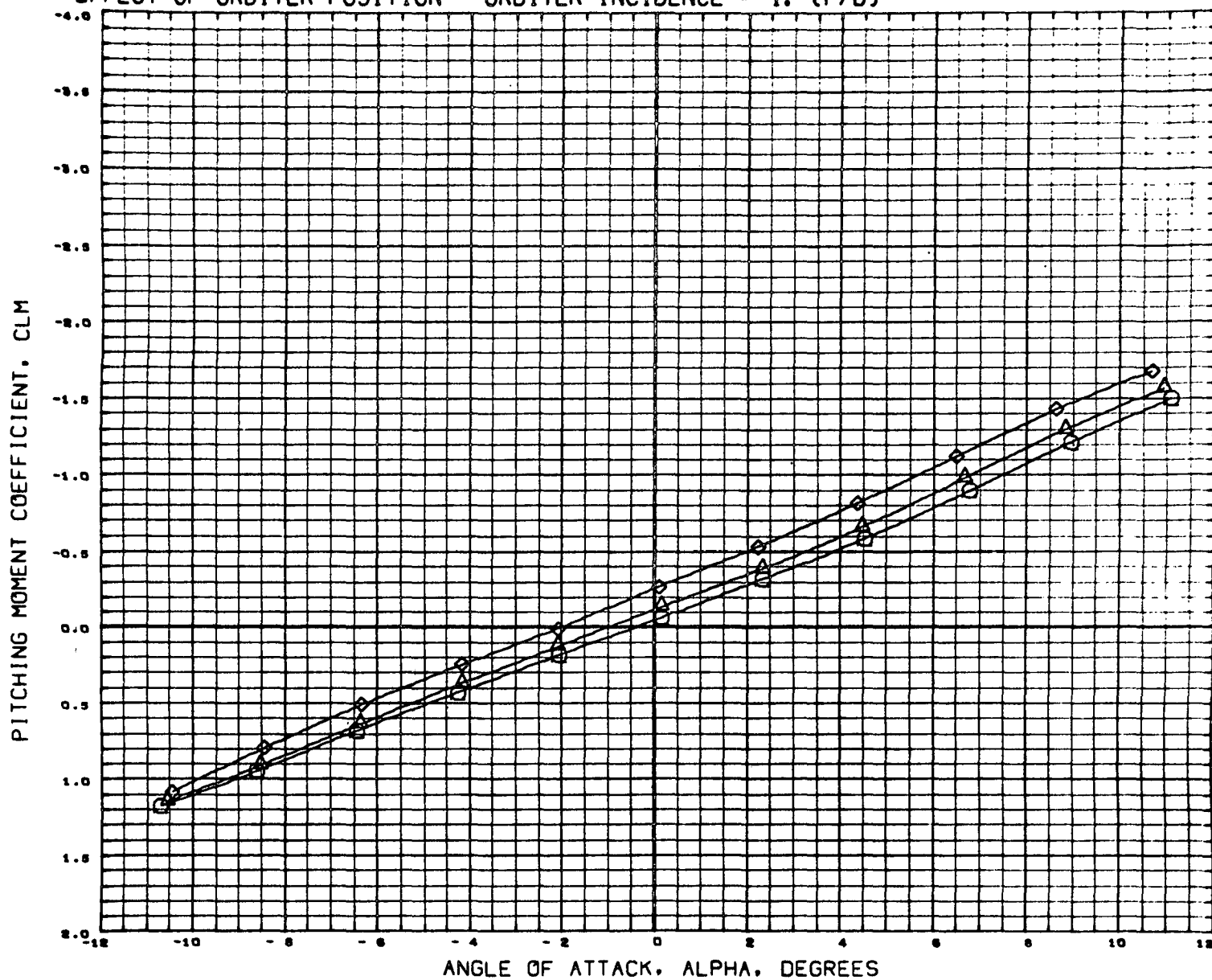


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.95

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

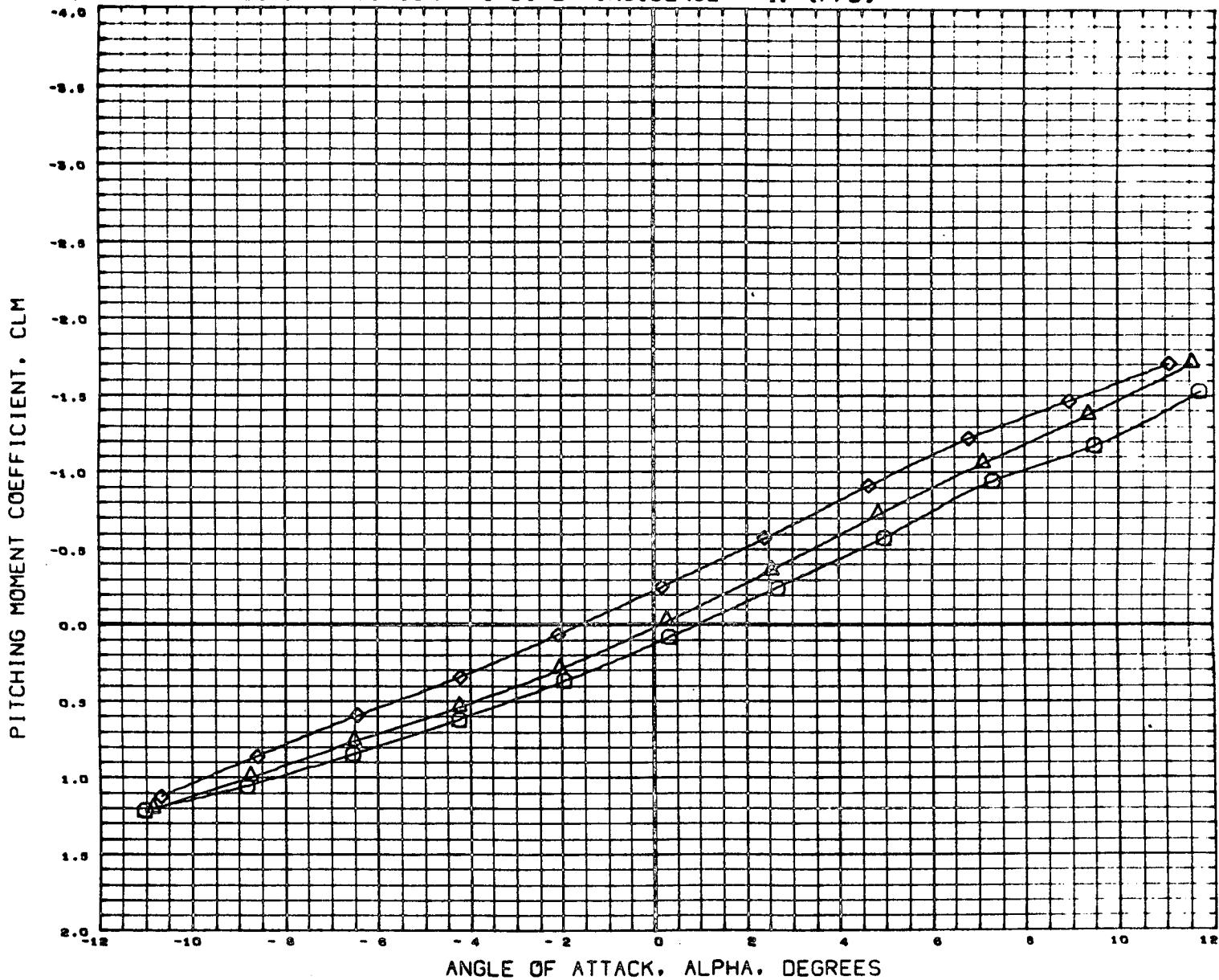


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(H3237A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	4.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(H3240A)	MSFC490 NR/GD LAUNCH B20148W14V8+B3W17V17	4.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

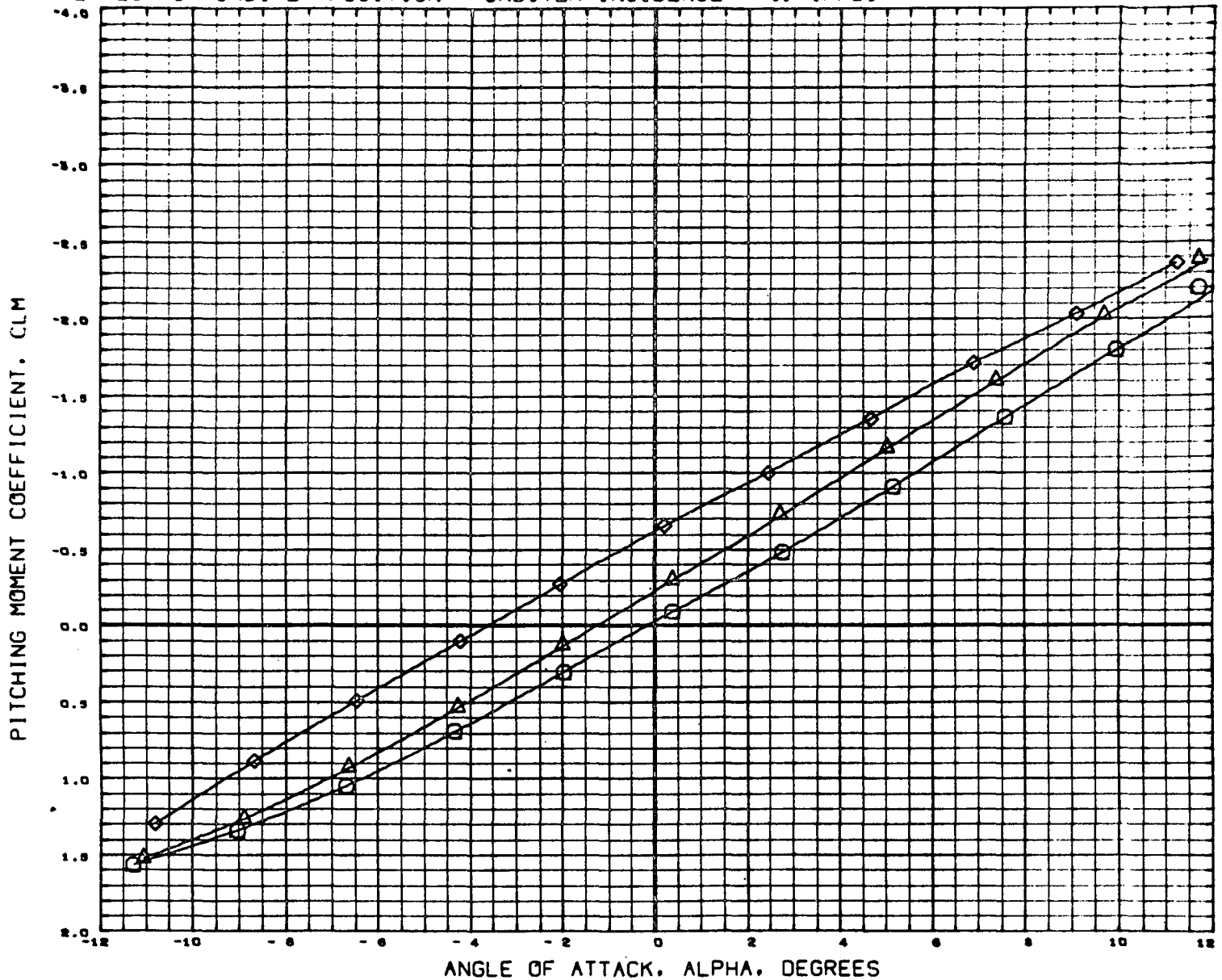


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
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						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0033	SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

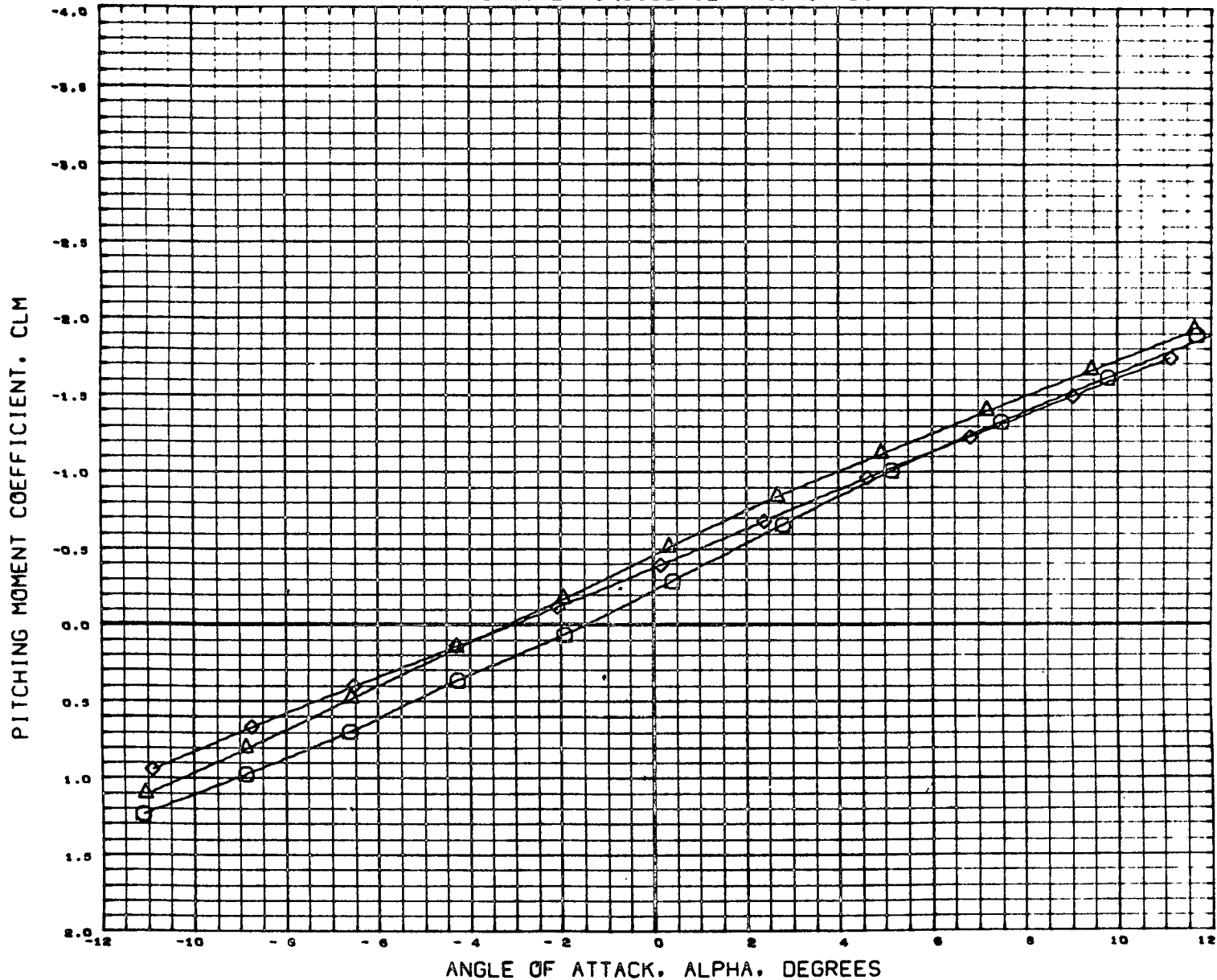


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.09

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

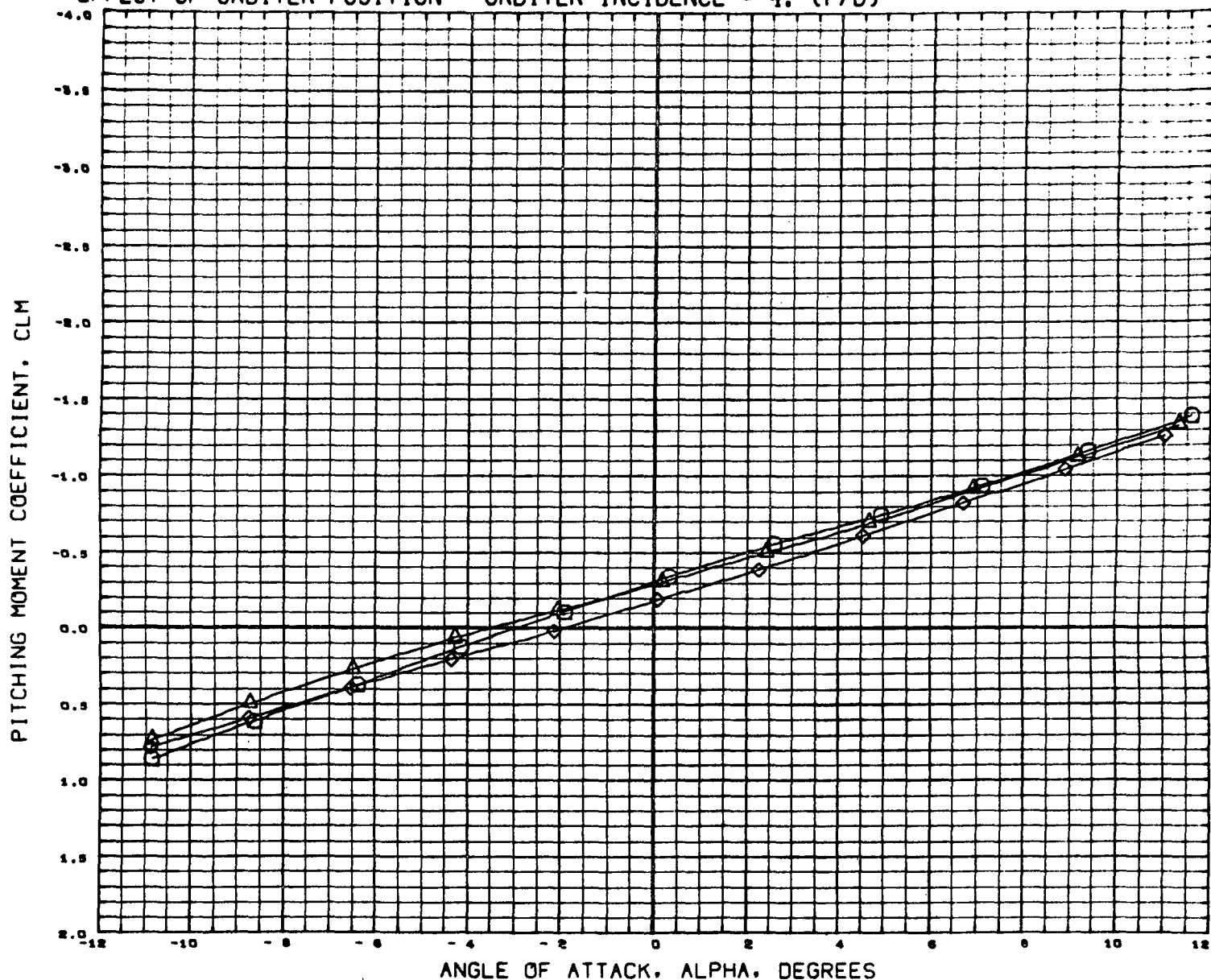


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)



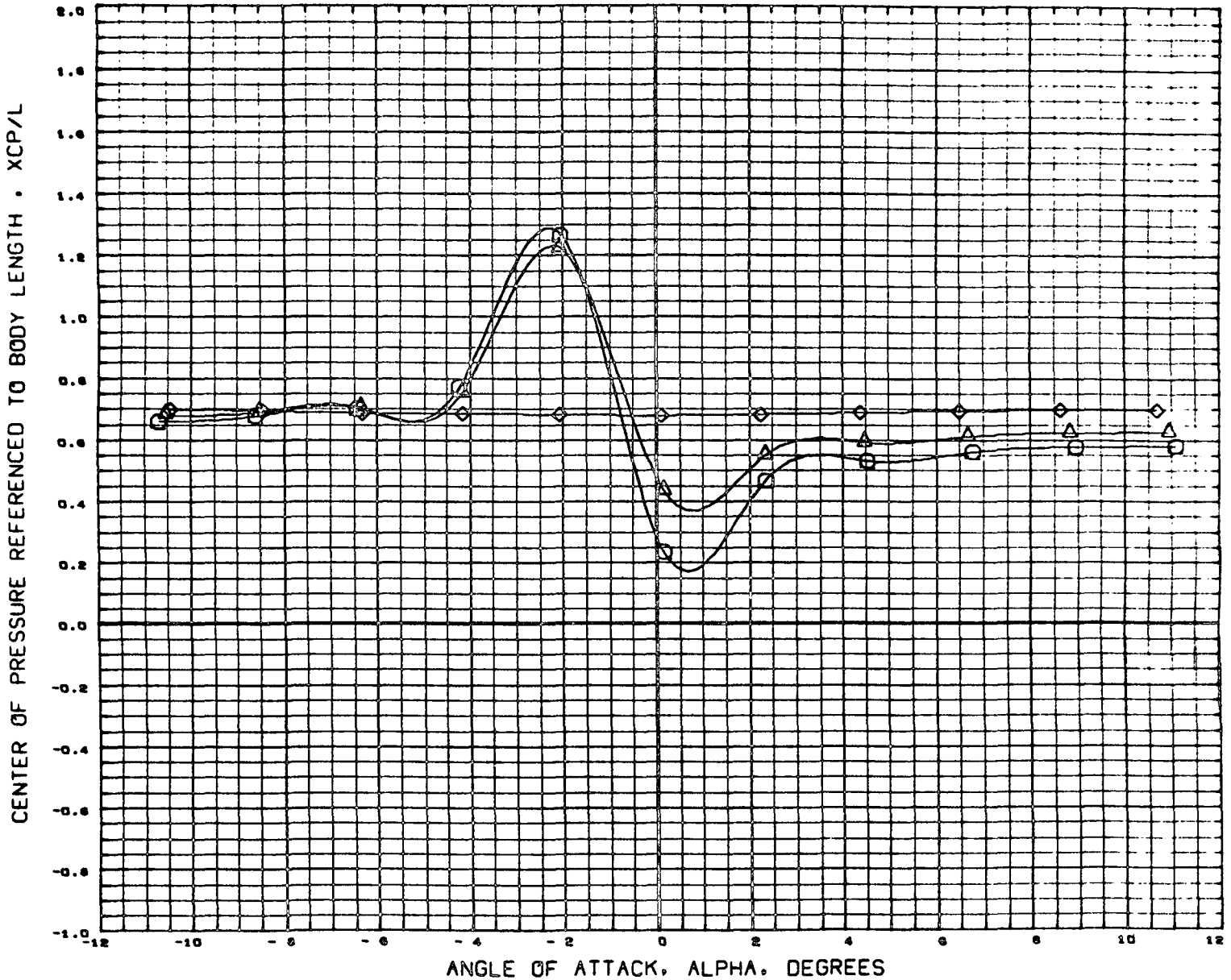
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 30 IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH

1.95

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

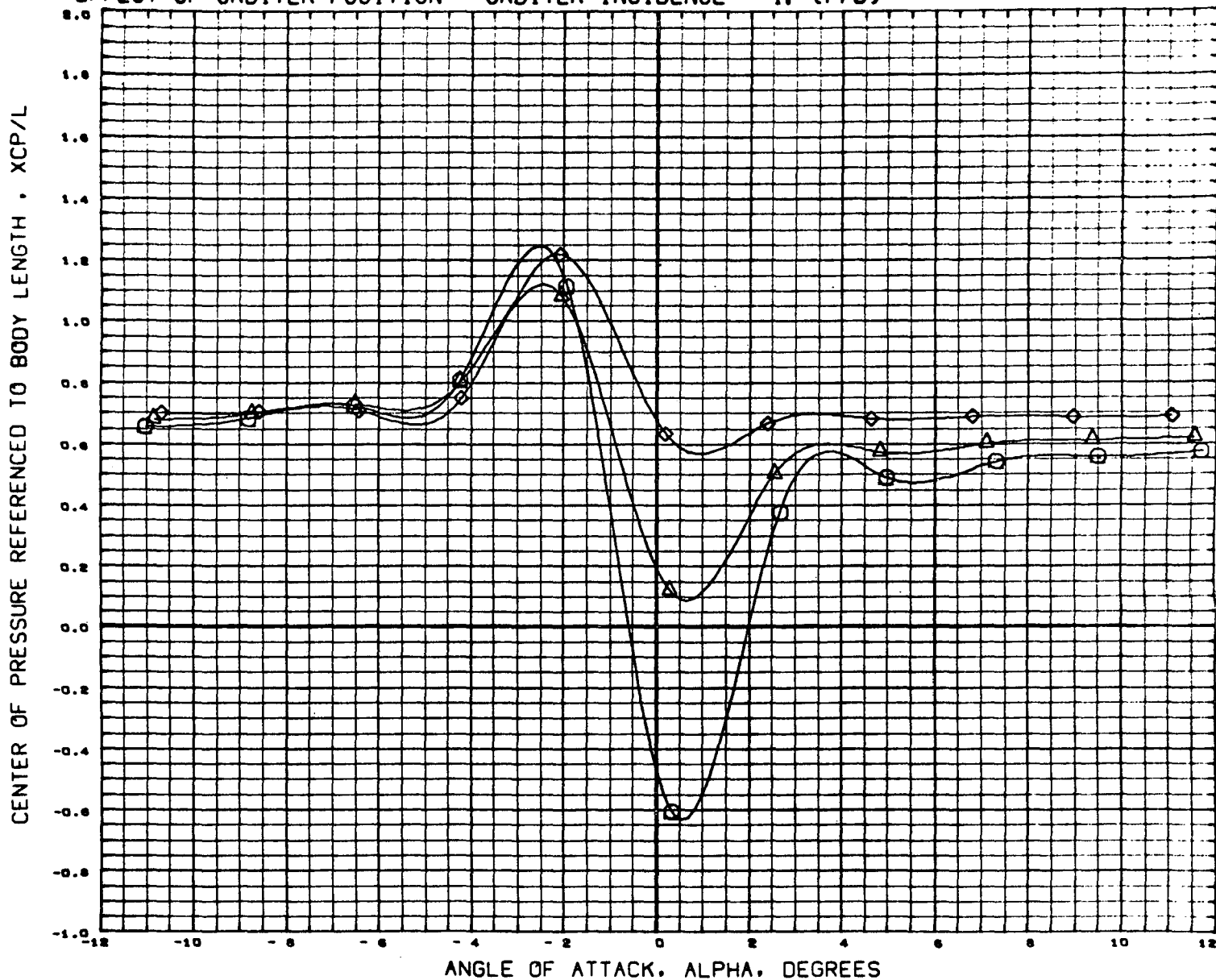


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH 820C4BW14V8-85W17V17	4.000	1.000	0.000	0.000	SREF	15.8560 30 IN
(H3240A)	MSFC490 NR/GD LAUNCH 82014BW14V8-85W17V17	4.000	2.000	0.000	0.000	LREP	3.0930 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH 820C4BW14V8-85W17V17	4.000	3.000	0.000	0.000	BREP	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

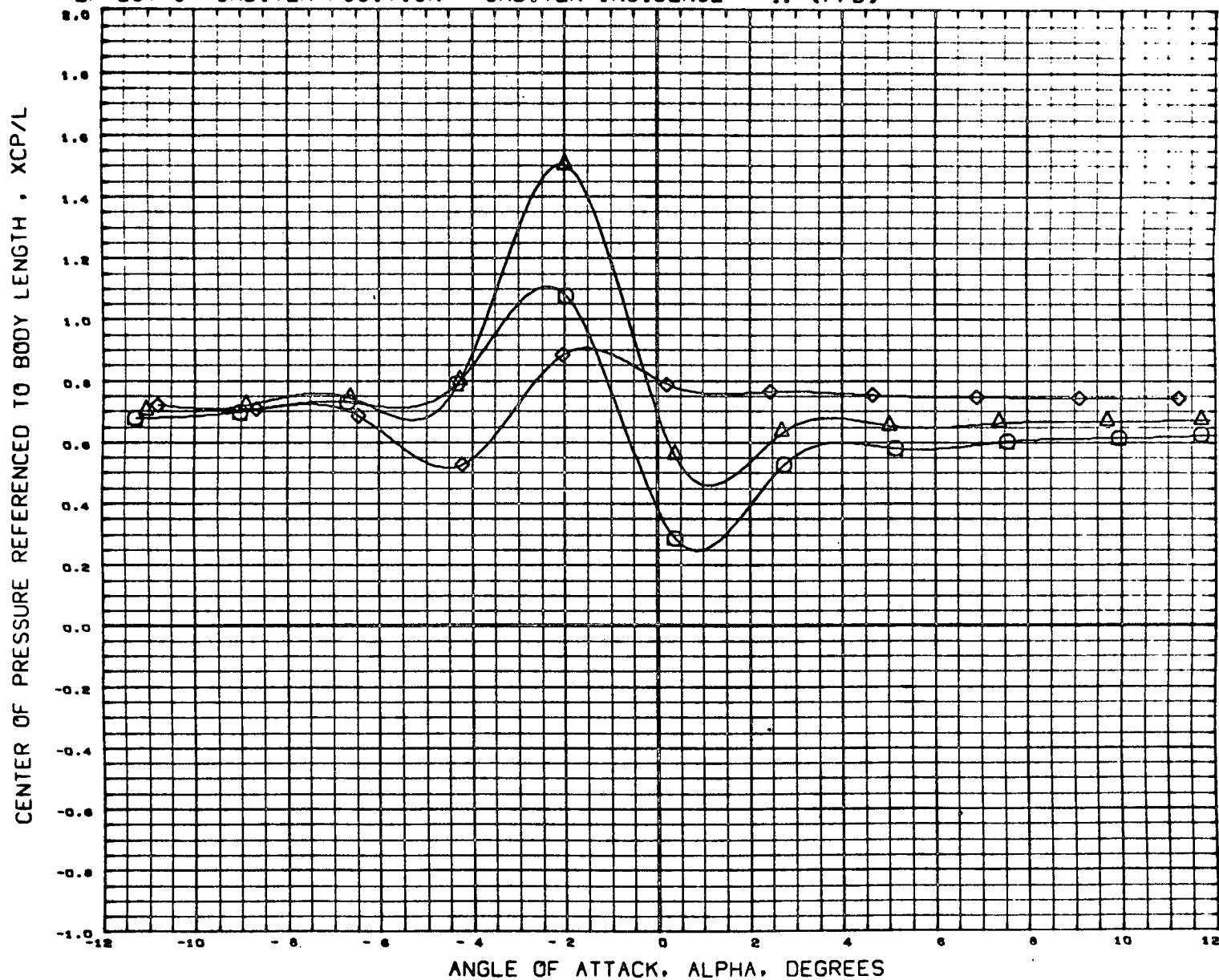


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	H3FC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3240A)	H3FC490 NR/GD LAUNCH B20148W14V8+B3W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	H3FC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)



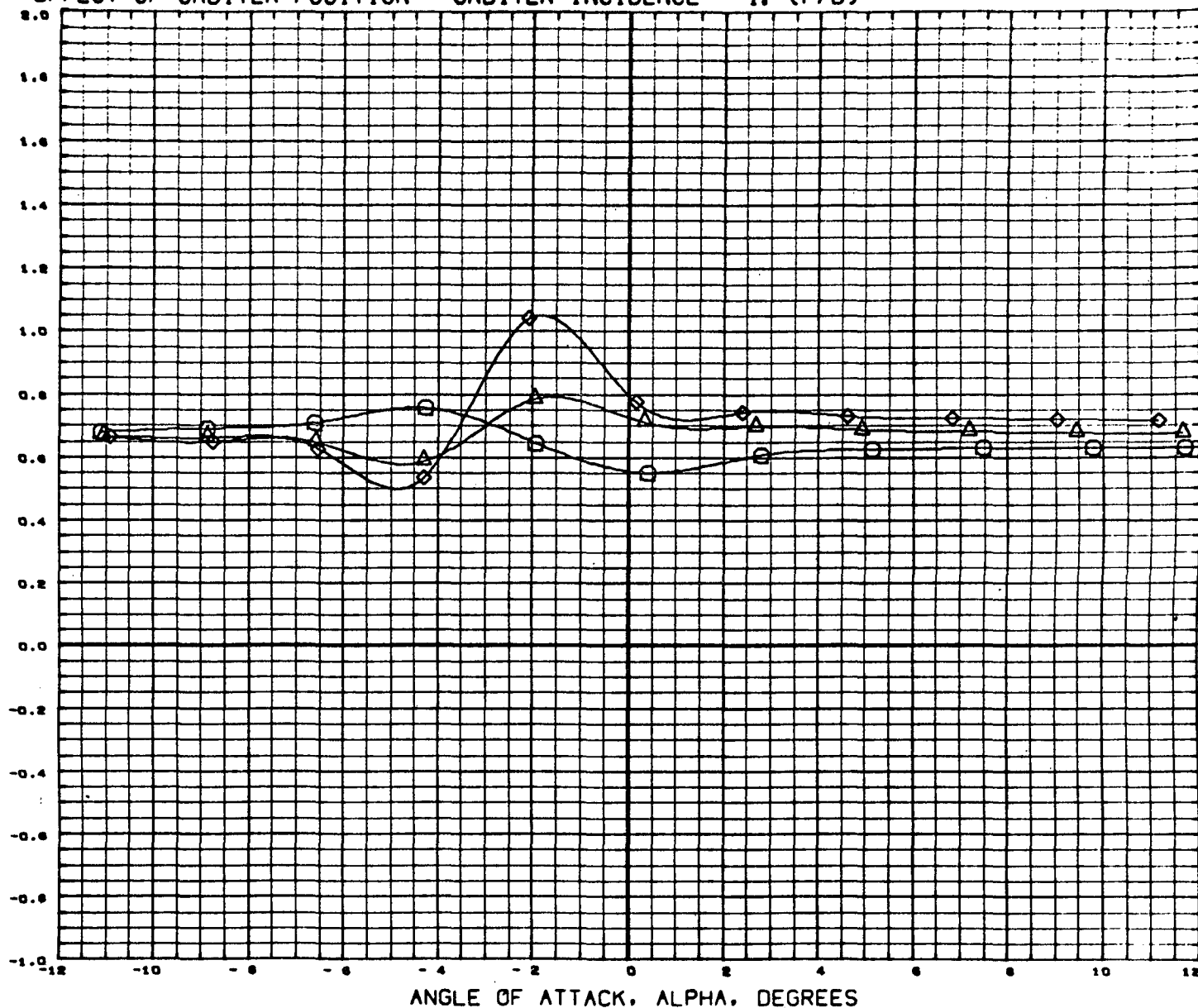
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.09

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

CENTER OF PRESSURE REFERENCED TO BODY LENGTH, XCP/L

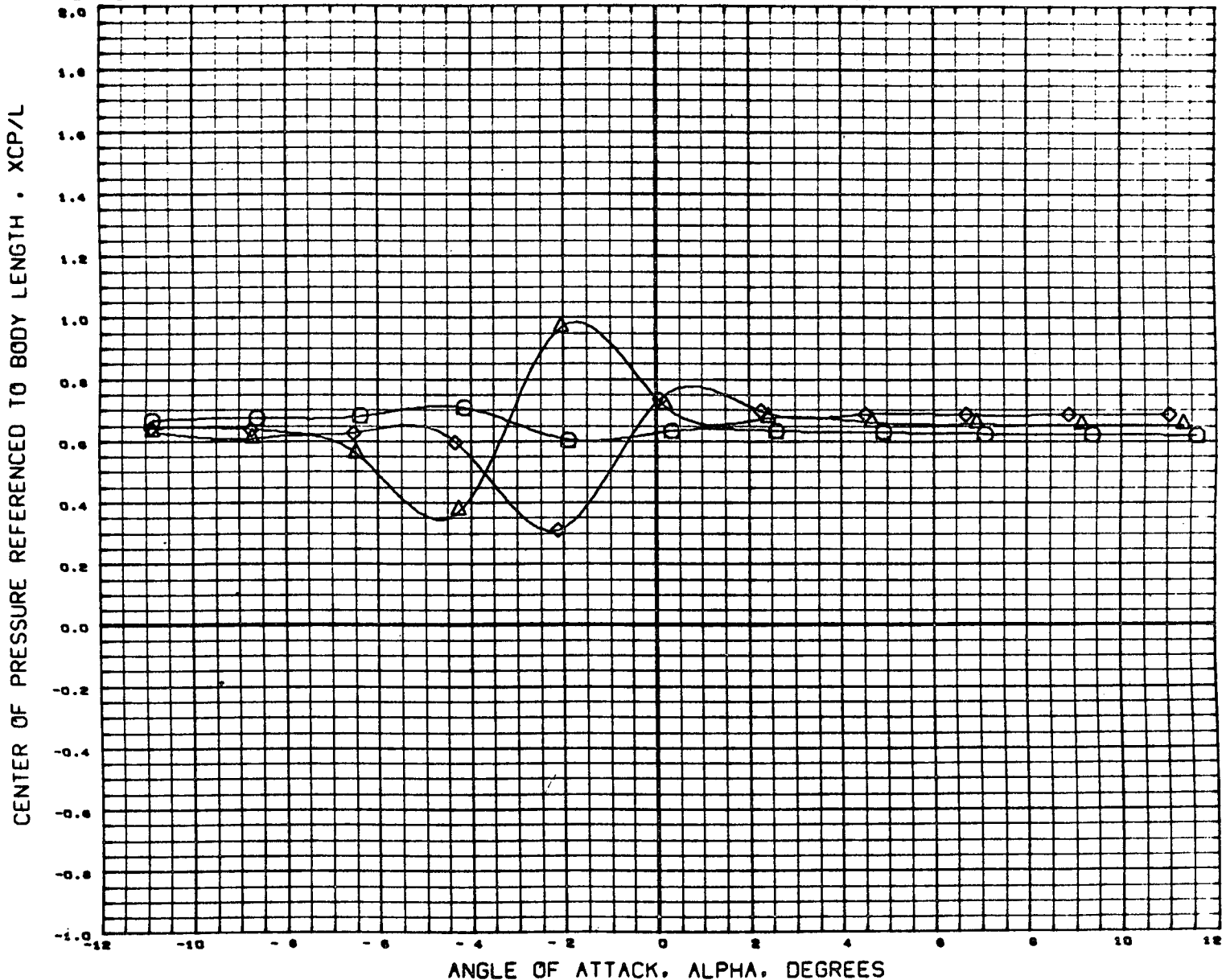


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 50 IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

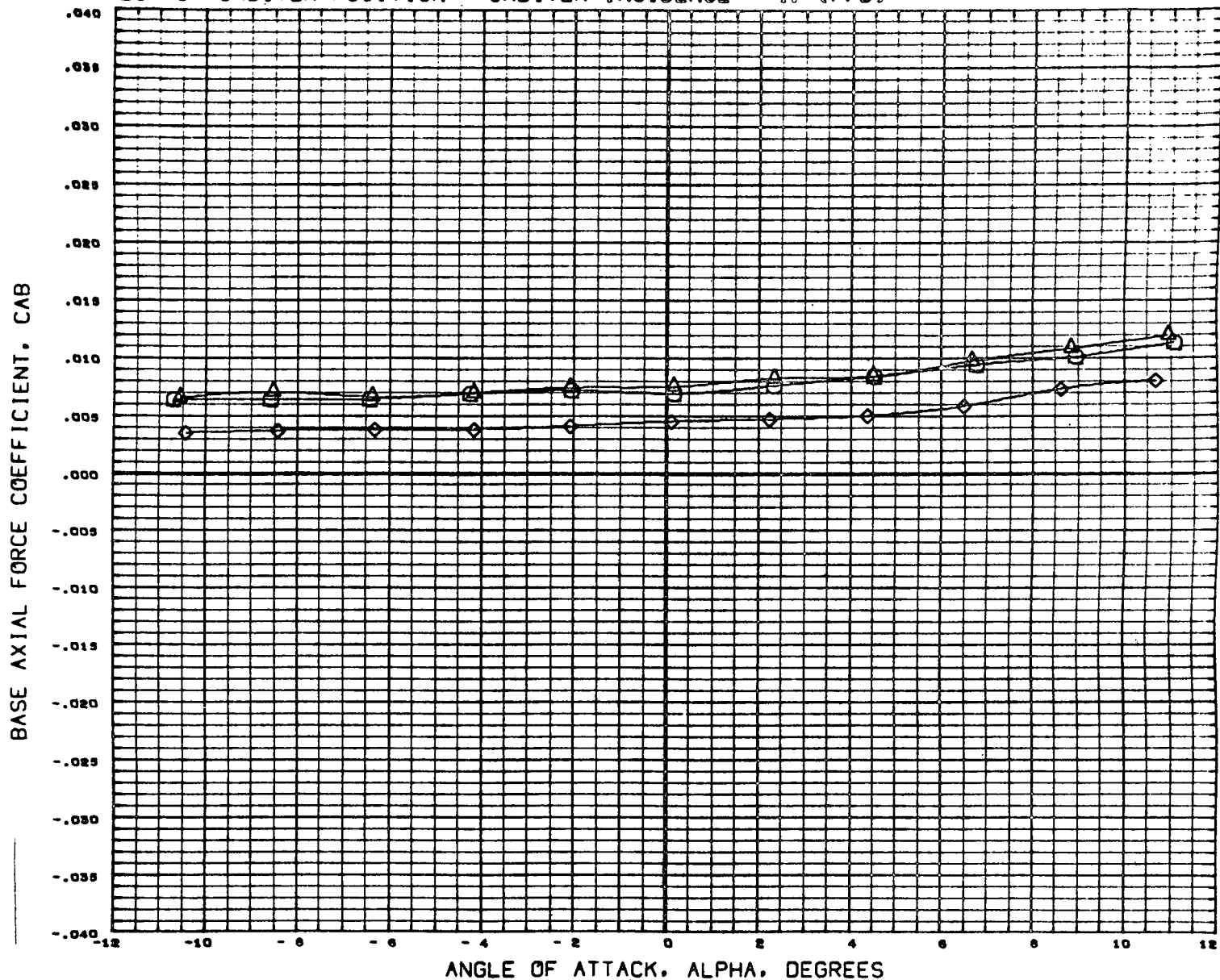


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(M3237A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	19.6560	30 IN
(M3240A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(M3244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0039	SCALE

MACH 1.95

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

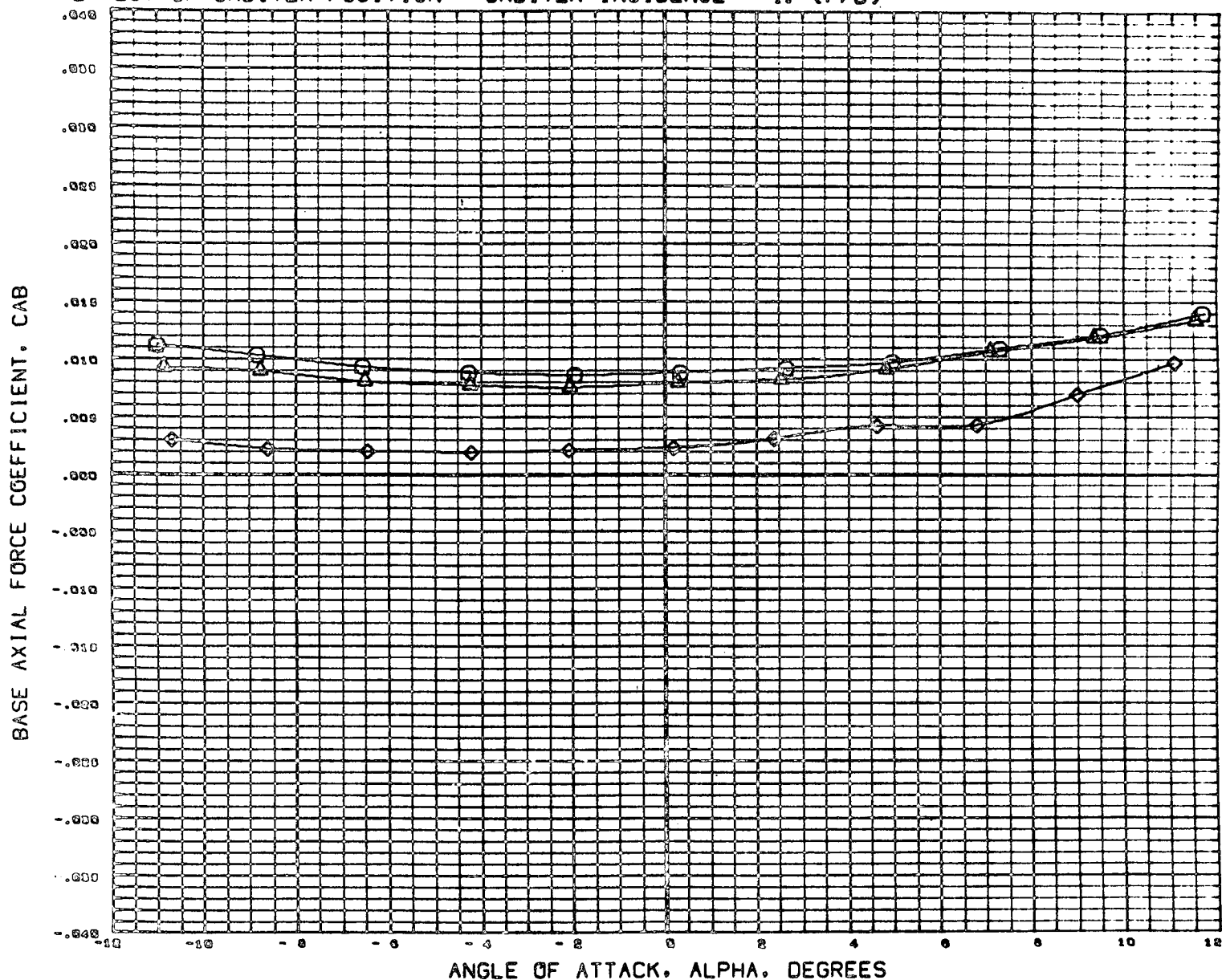


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBITER	POSITION	BETA	ELVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 30 IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+85W17V17	4.000	2.000	0.000	0.000	LREF	3.0990 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

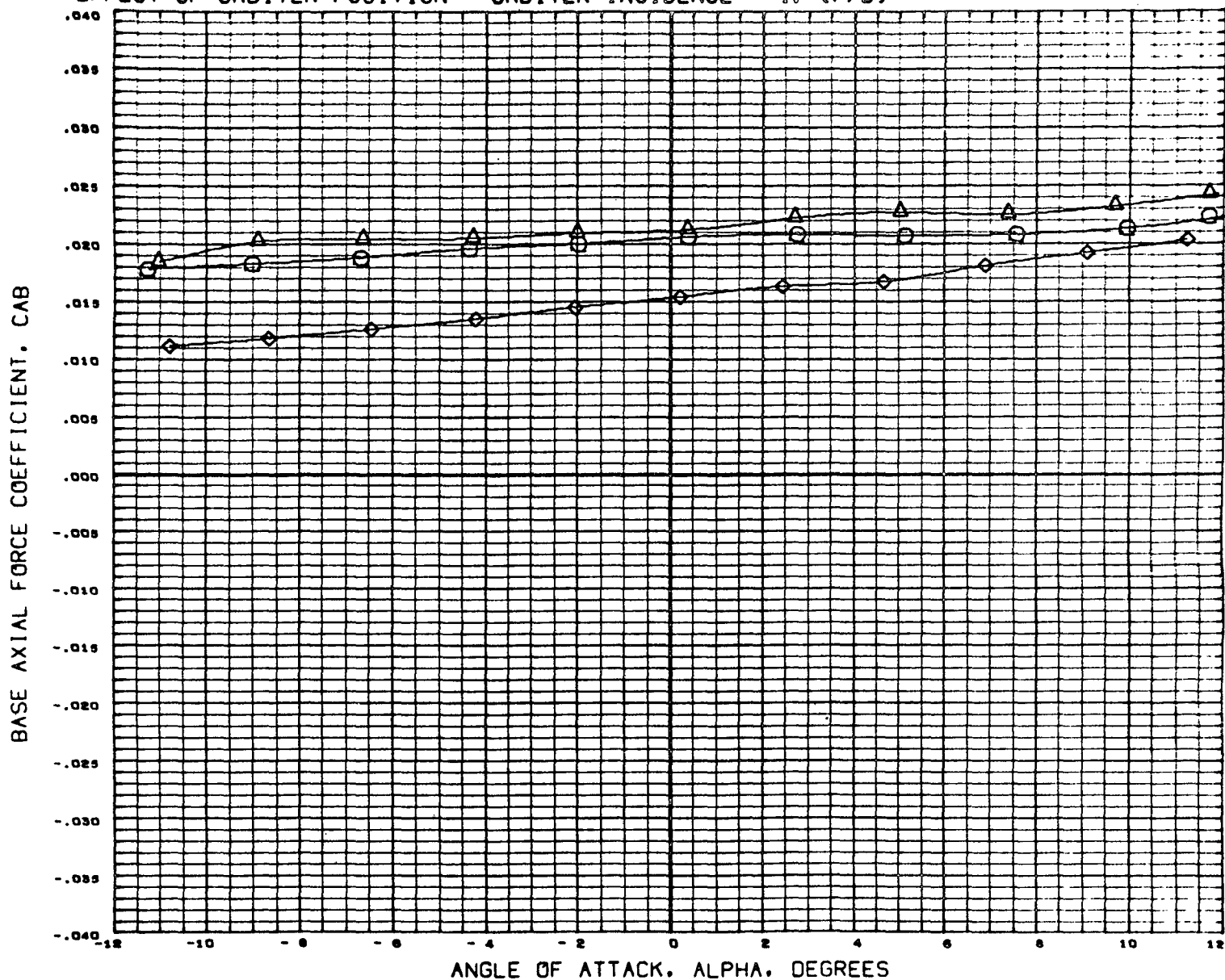


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(MS20PA)	MSPC400 NR/60 LAUNCH B20C48W14V0+BSW17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(MS240A)	MSPC490 NR/60 LAUNCH B20148W14V0+BSW17V17	4.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(MS244A)	MSPC490 NR/60 LAUNCH B20C48W14V0+BSW17V17	4.000	0.000	0.000	0.000	BREF	0.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

PAGE 222

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/8)

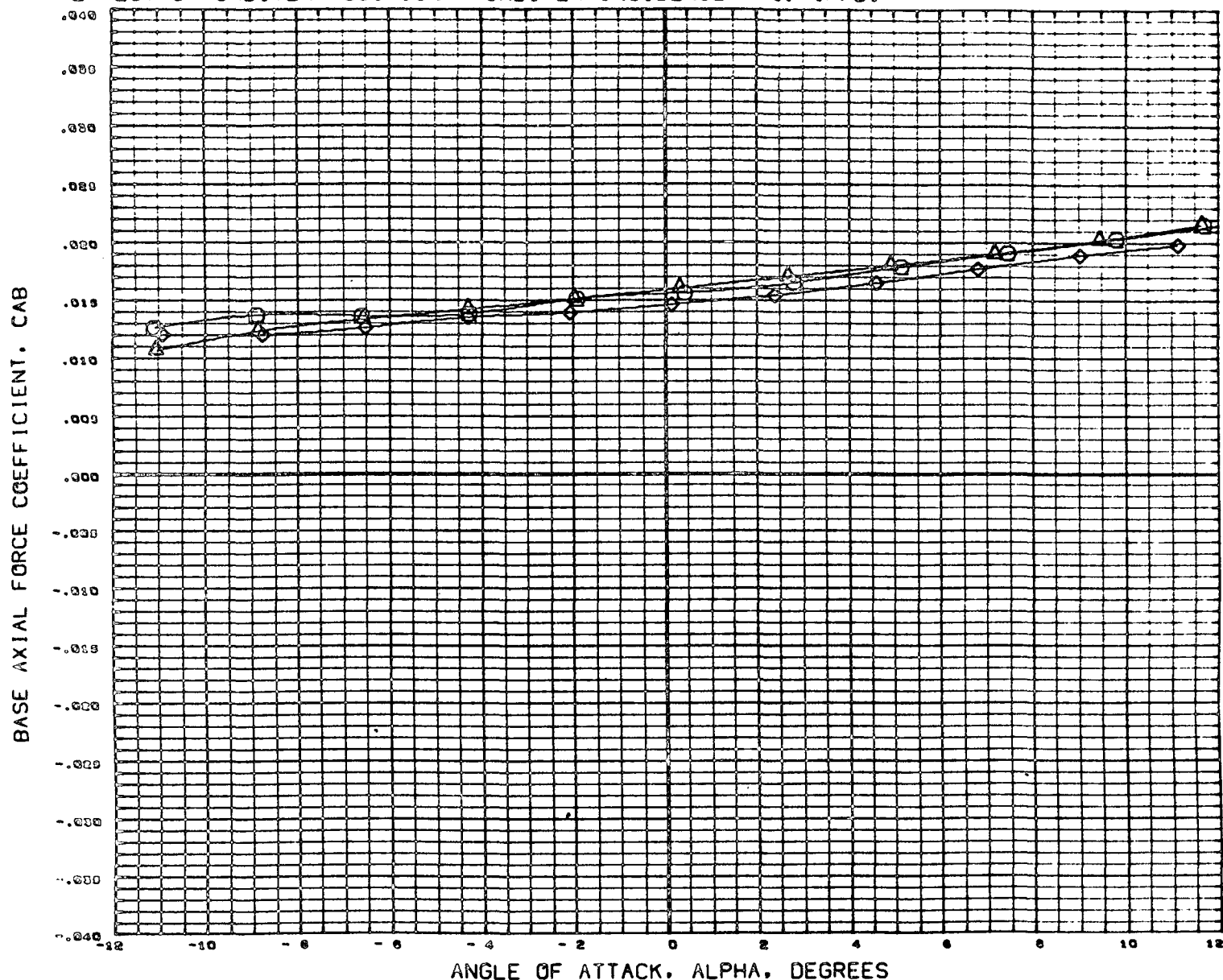


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(H3237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560	SQ IN
(H3240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0990	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0039	SCALE

MACH 1.09

PAGE 223

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/8)

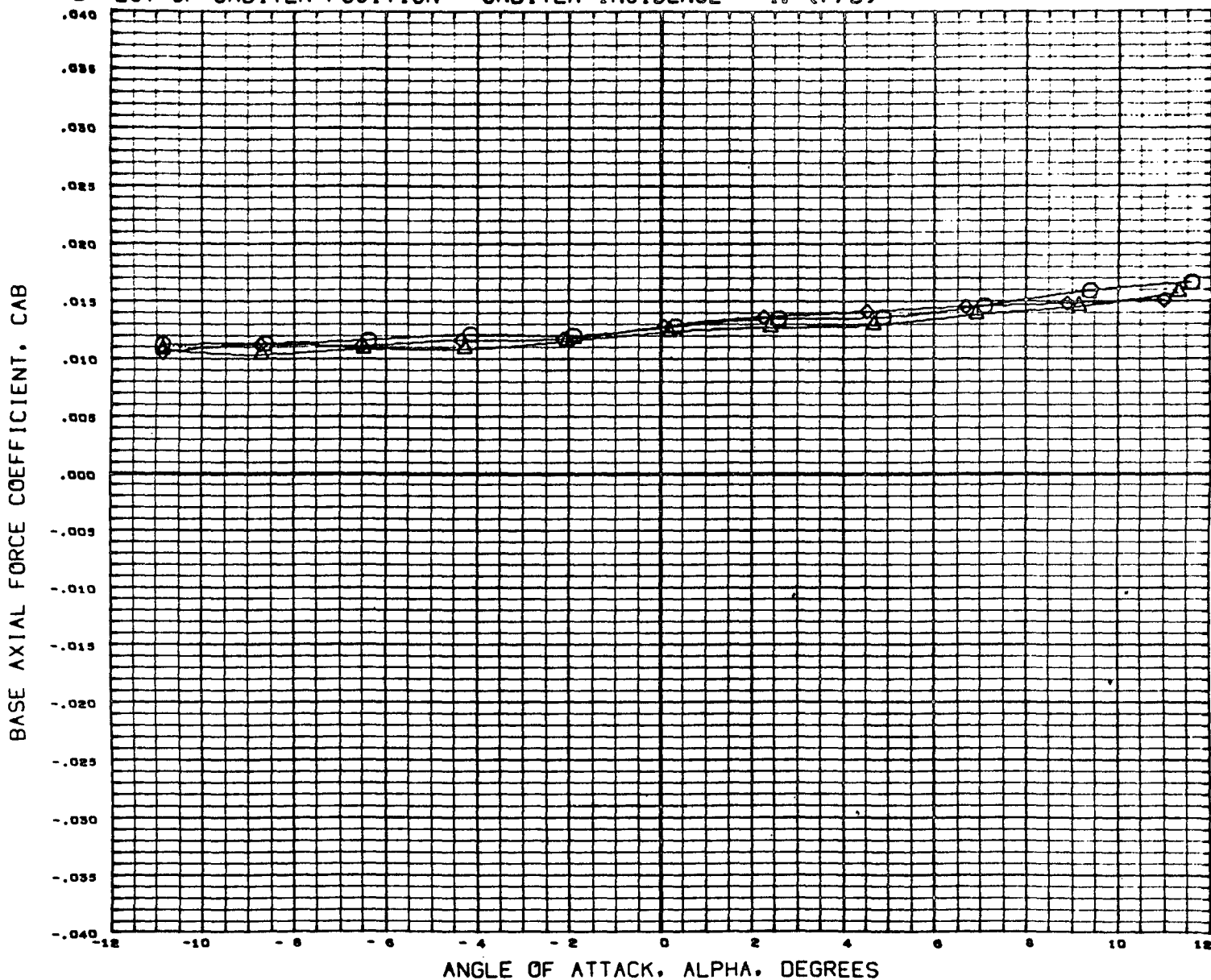


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ZLVATR	REFERENCE INFORMATION	
(H3237A)	MSFC490 NR/GD LAUNCH B20C48W14V8+85W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(H3240A)	MSFC490 NR/GD LAUNCH B20148W14V8+85W17V17	4.000	2.000	0.000	0.000	LREF	3.0930 INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C48W14V0+85W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.47

PAGE 224

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)



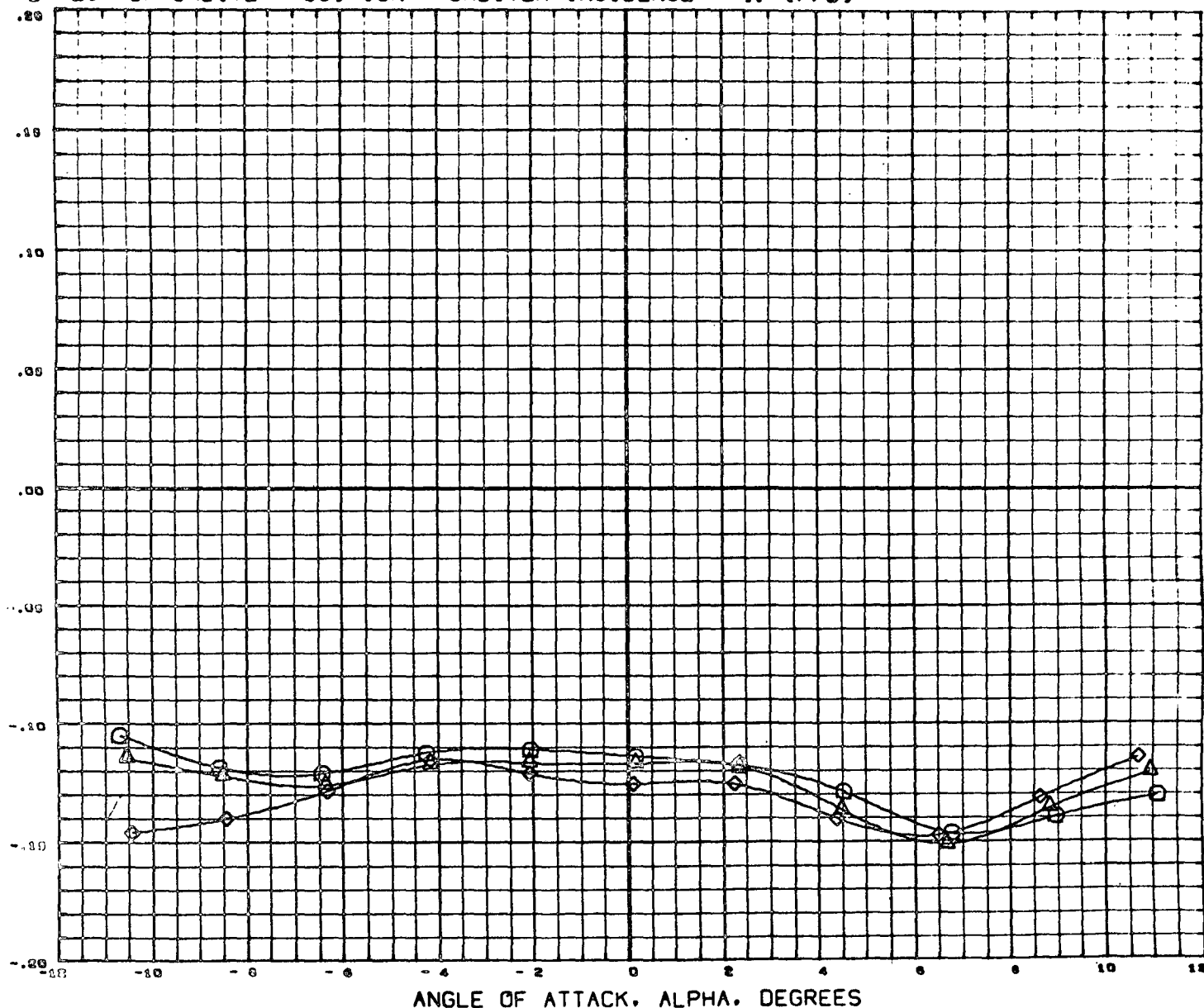
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(H3237A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(H3240A)	MSFC490 NR/GD LAUNCH B20I48W14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(H3244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.95

PAGE 225

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE

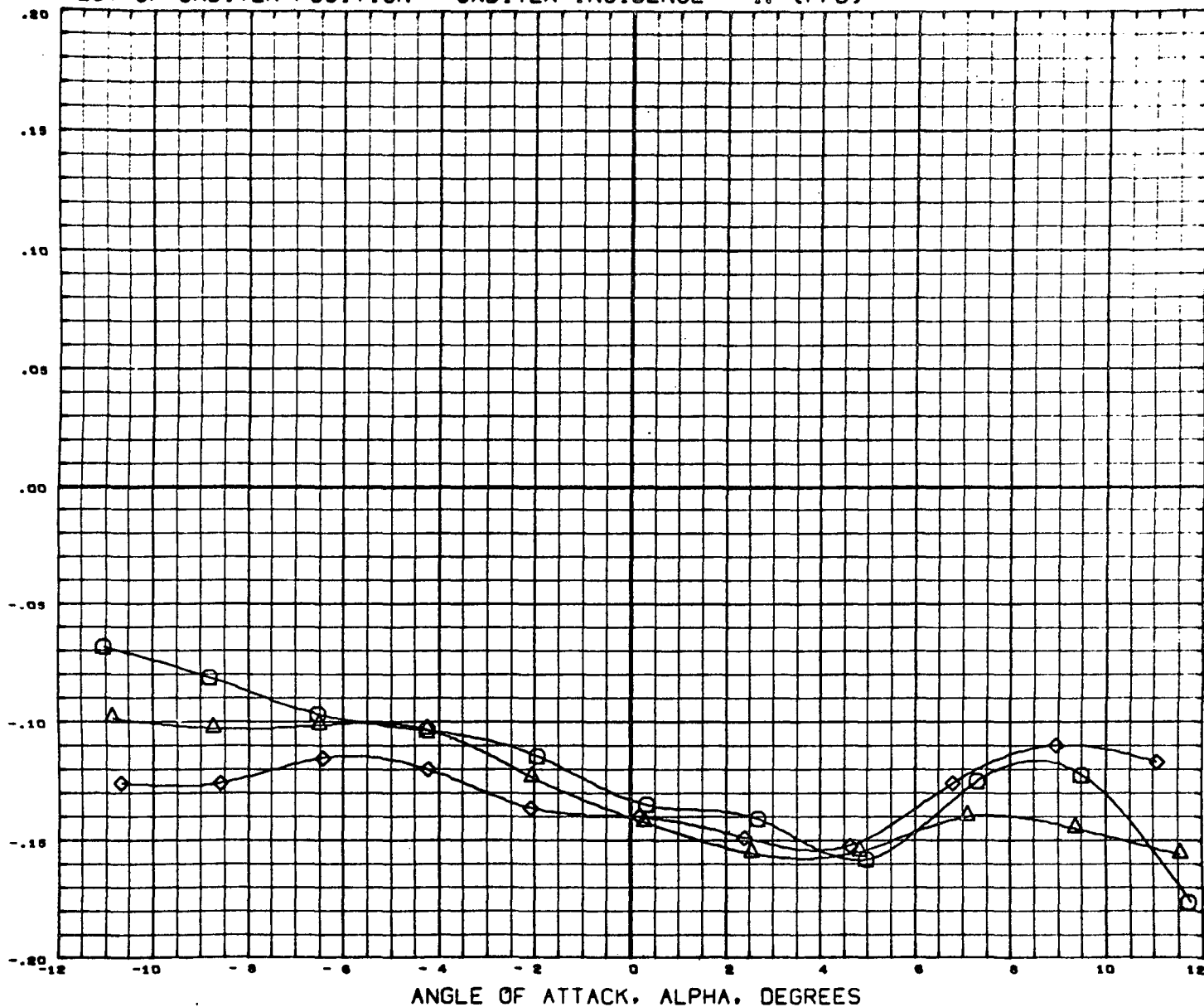


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13297A)	MSFC490 NR/CD LAUNCH B20C48W14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(13240A)	MSFC490 NR/CD LAUNCH B20148W14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0990	INCHES
(13244A)	MSFC490 NR/CD LAUNCH B20C48W14V8+B5W17V17	6.000	3.000	0.000	0.000	SREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0033	SCALE

MACH .60

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE

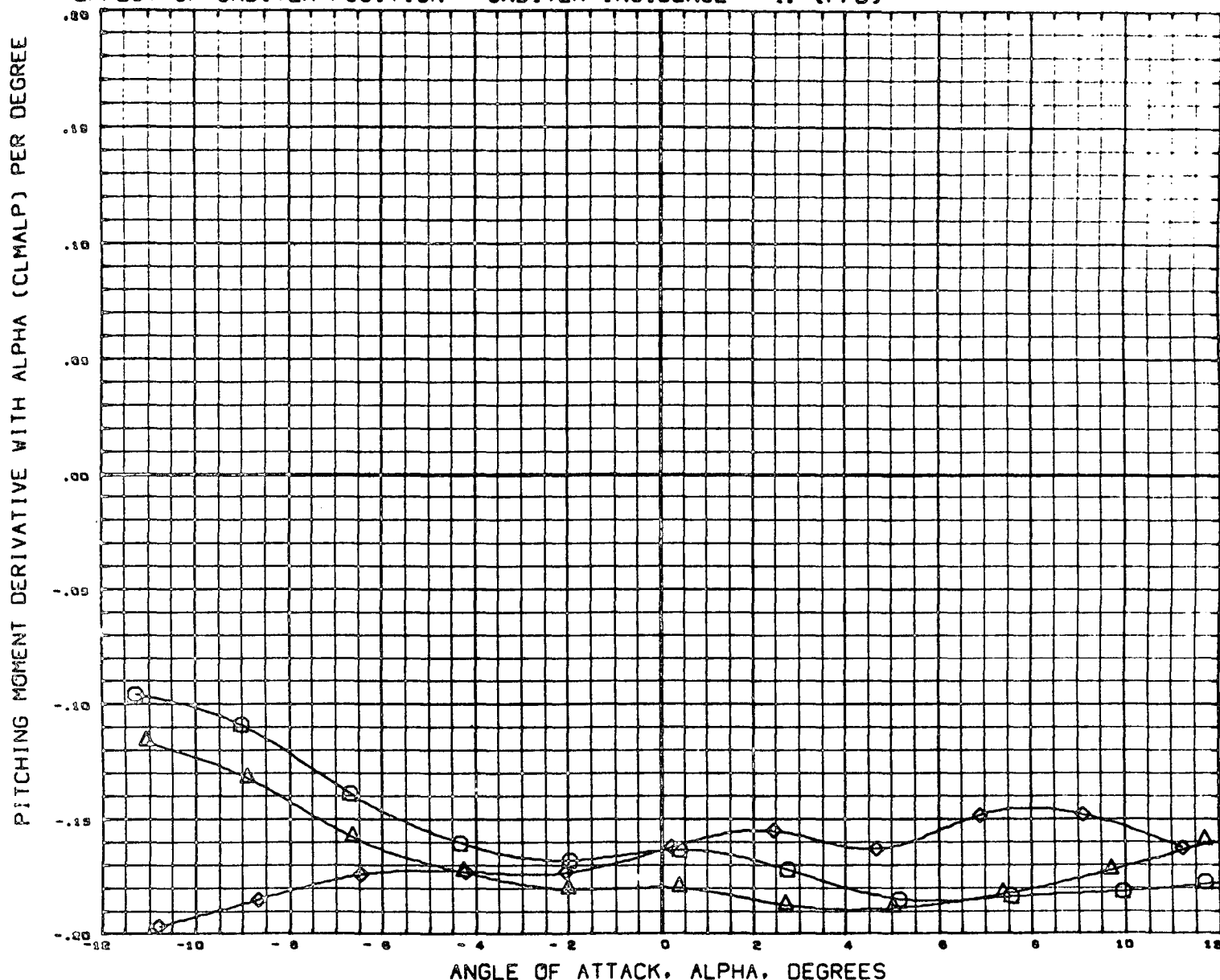


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13237A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13240A)	MSFC490 NR/GD LAUNCH B2014BW14V6+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

PAGE 227

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)



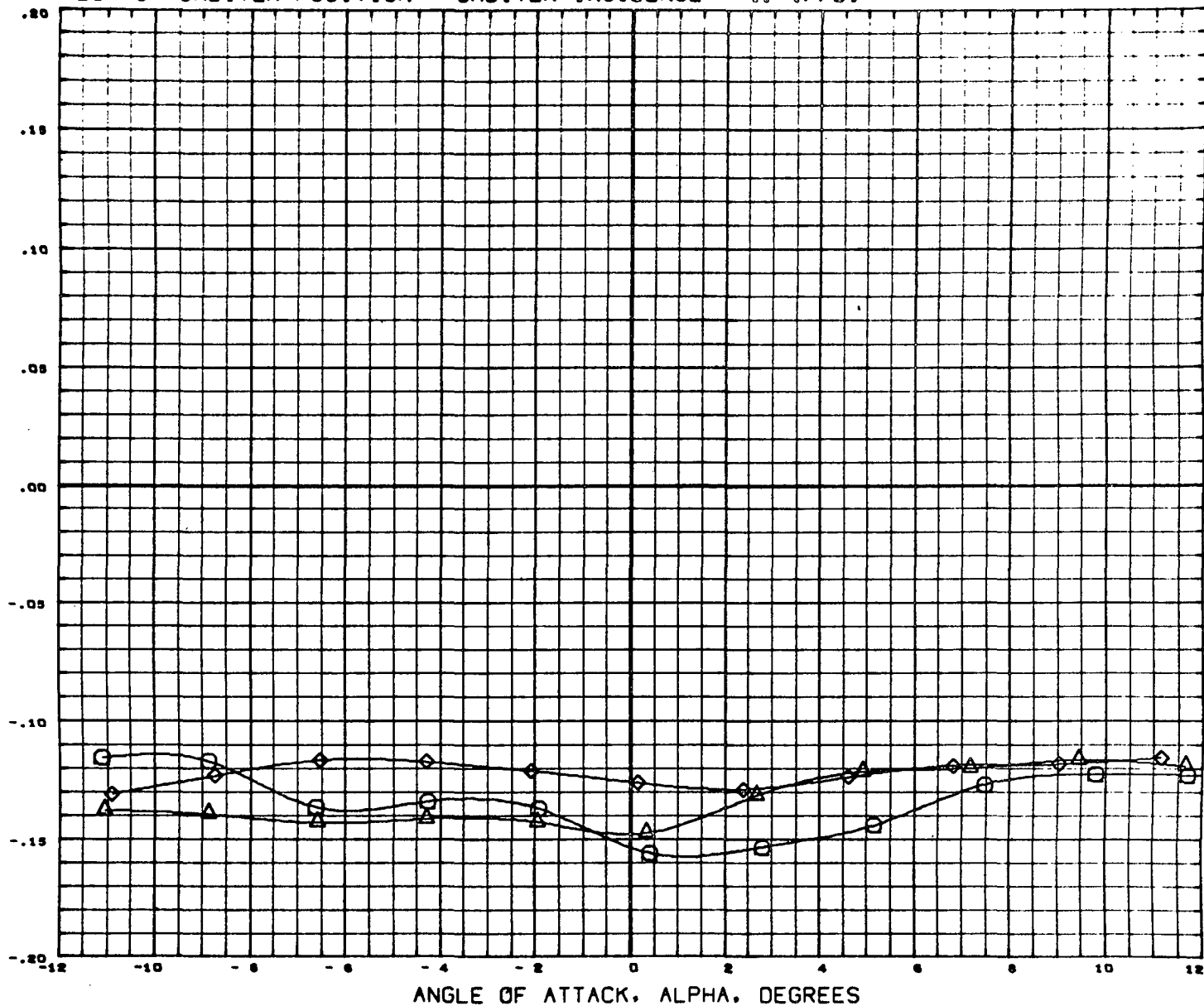
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13237A)	MSPC490 NR/GD LAUNCH B20C4BW14V0+B3W17V17	4.000	1.000	0.000	0.000	SREF	15.6580 30 IN
(13240A)	MSPC490 NR/GD LAUNCH B2014BW14V0+B3W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13244A)	MSPC490 NR/GD LAUNCH B20C4BW14V0+B3W17V17	4.000	3.000	0.000	0.000	SREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.09

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



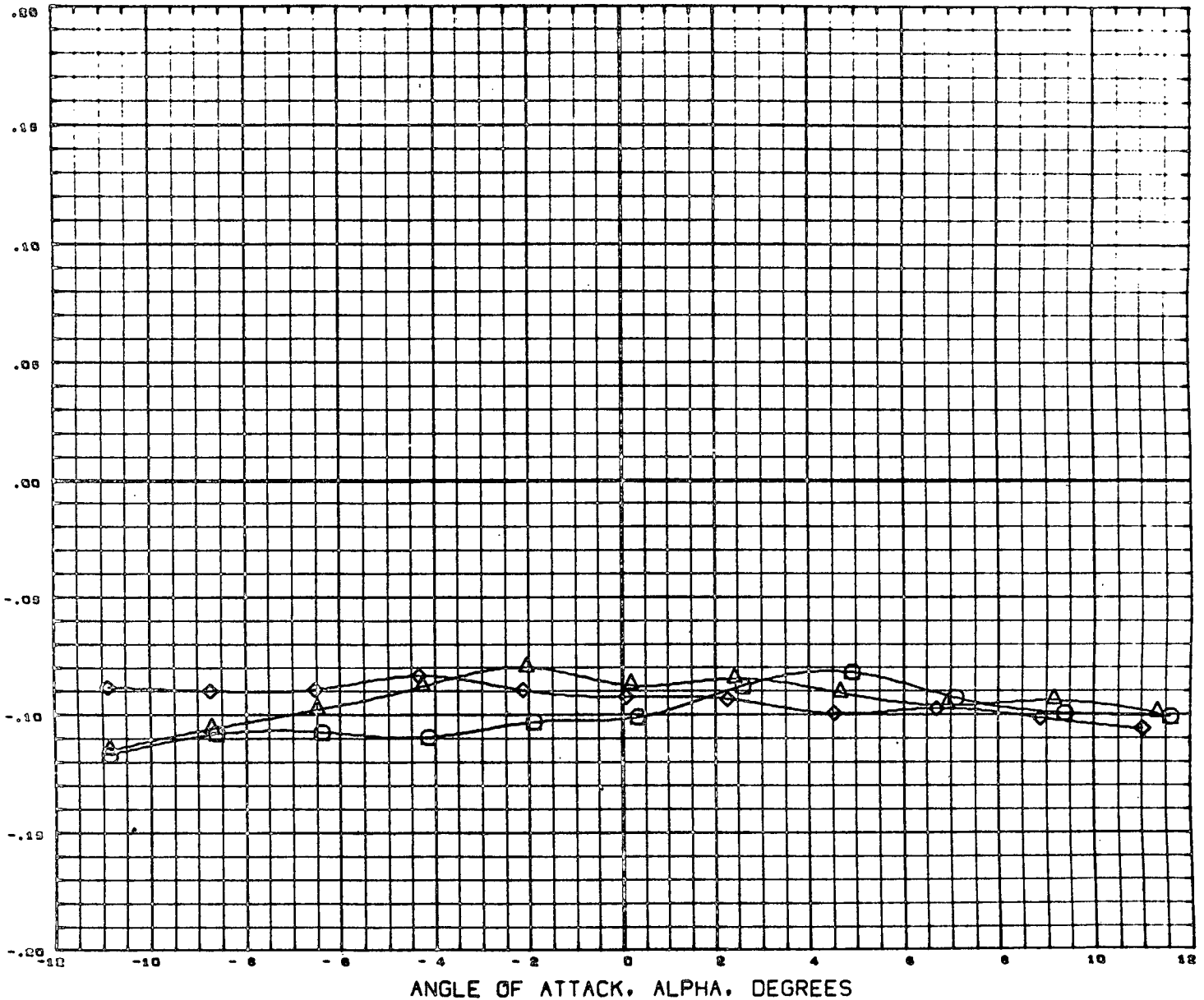
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17	4.000	1.000	0.000	0.000	SREF	15.6360 SQ IN
(13240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+BSW17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13237A)	MSFC490 NR/60 LAUNCH 820C4BW14V8+85W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13240A)	MSFC490 NR/60 LAUNCH 82014BW14V8+85W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13244A)	MSFC490 NR/60 LAUNCH 820C4BW14V8+85W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

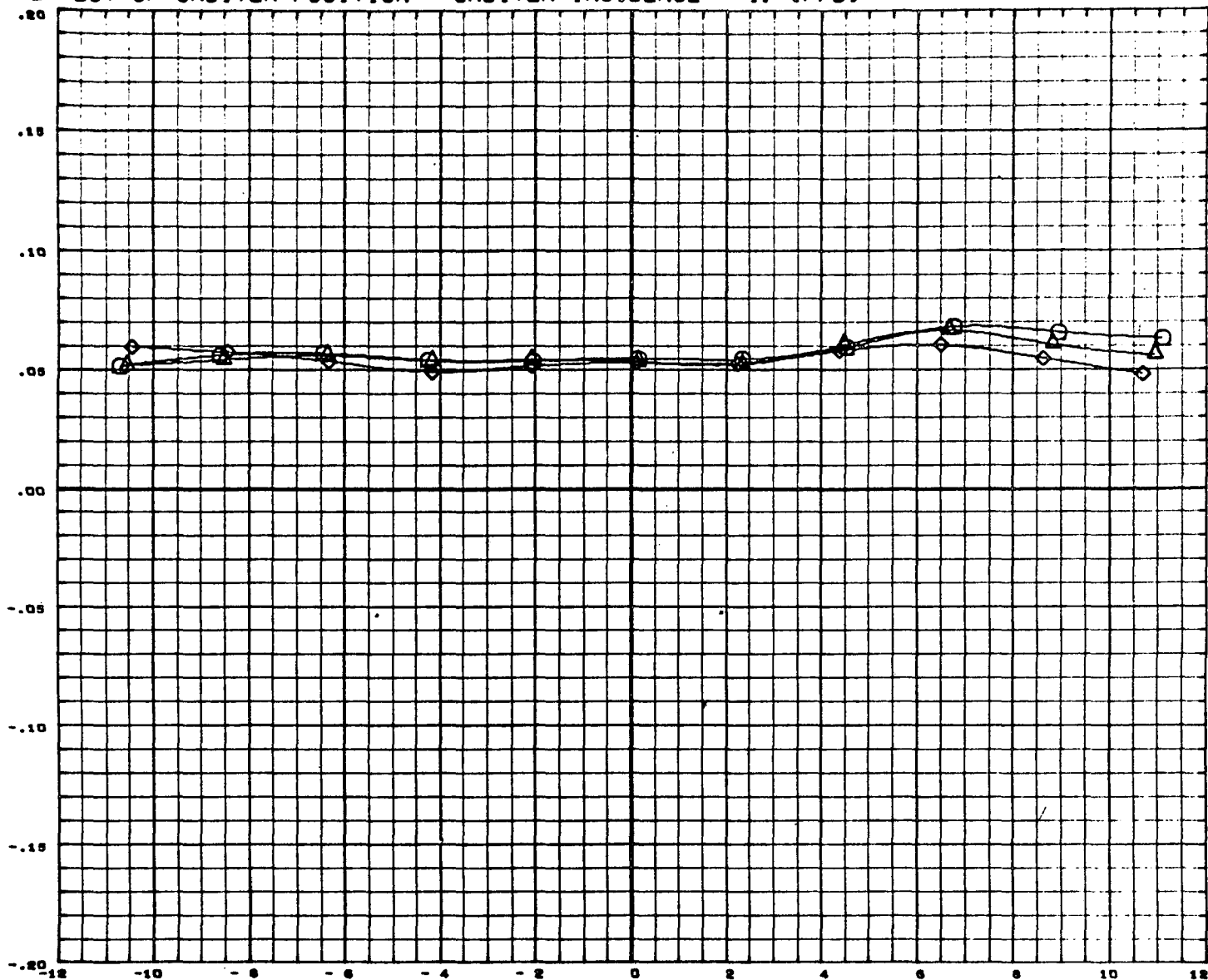
MACH

1.95

PAGE 230

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

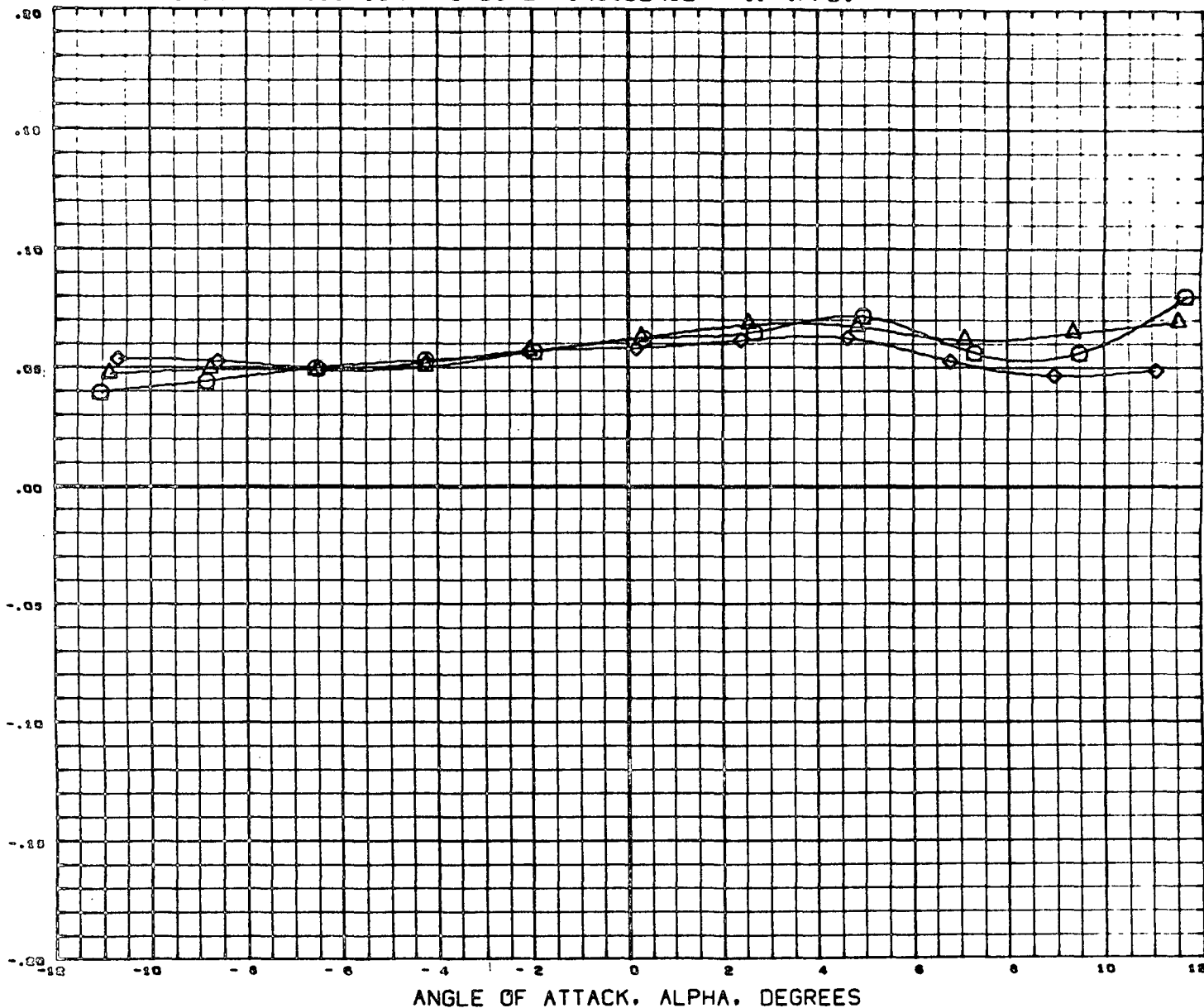
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(1) 237A	HSPC490 NR/GD LAUNCH B20C48W14V8-B5W17V17
(1) 240A	HSPC490 NR/GD LAUNCH B20I48W14V8-B5W17V17
(1) 244A	HSPC490 NR/GD LAUNCH B20C48W14V8-B5W17V17

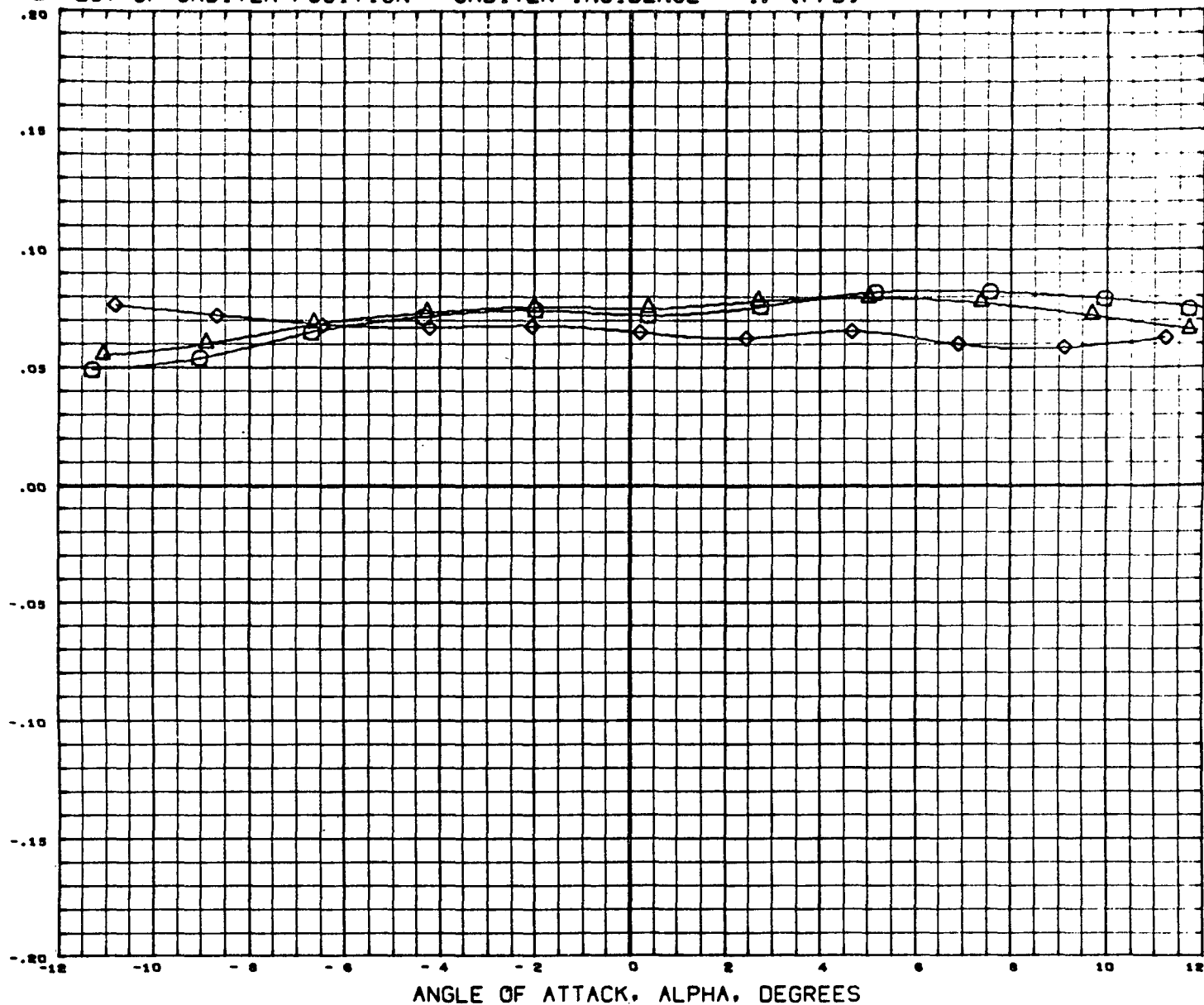
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
4.000	1.000	0.000	0.000	SREF 15.6560 SQ IN
4.000	2.000	0.000	0.000	LREF 3.0950 INCHES
4.000	3.000	0.000	0.000	BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

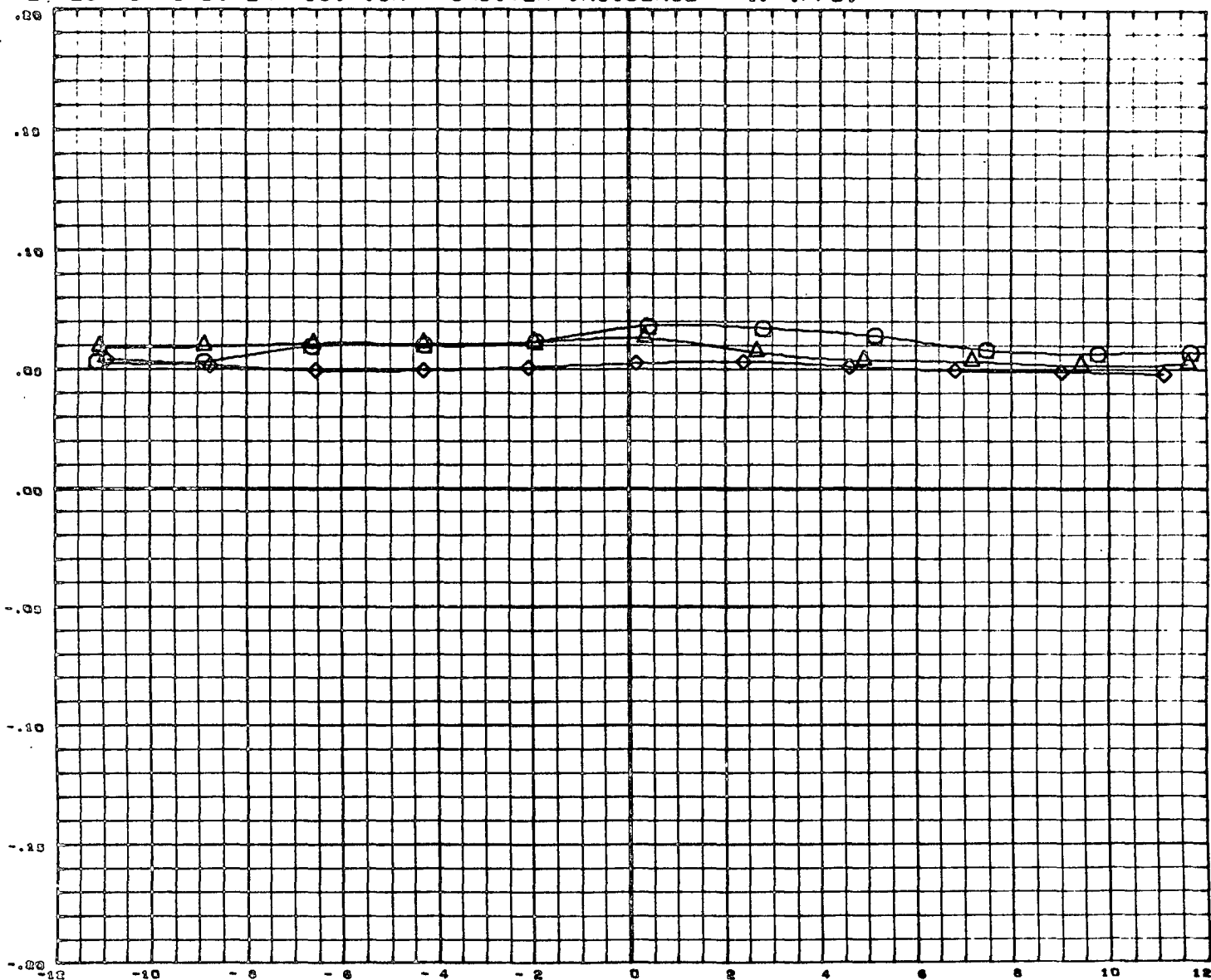
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560	50 IN
(13240A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950	INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.09

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

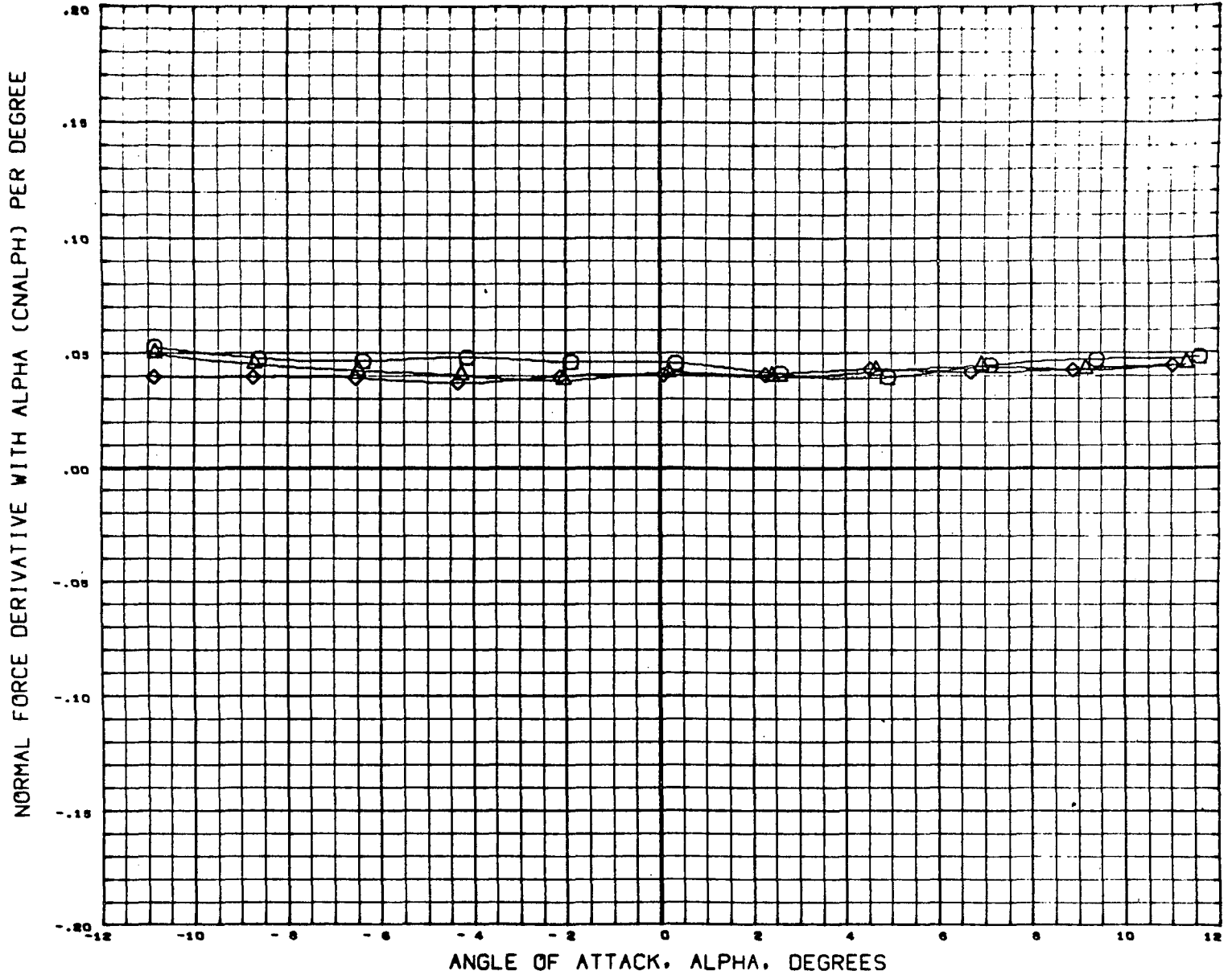
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(19237A)	MSFC490 NR/GD LAUNCH B20C4BW14V8-B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(19240A)	MSFC490 NR/GD LAUNCH B2014BW14V8-B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(19244A)	MSFC490 NR/GD LAUNCH B20C4BW14V8-B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH

1.47

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B)



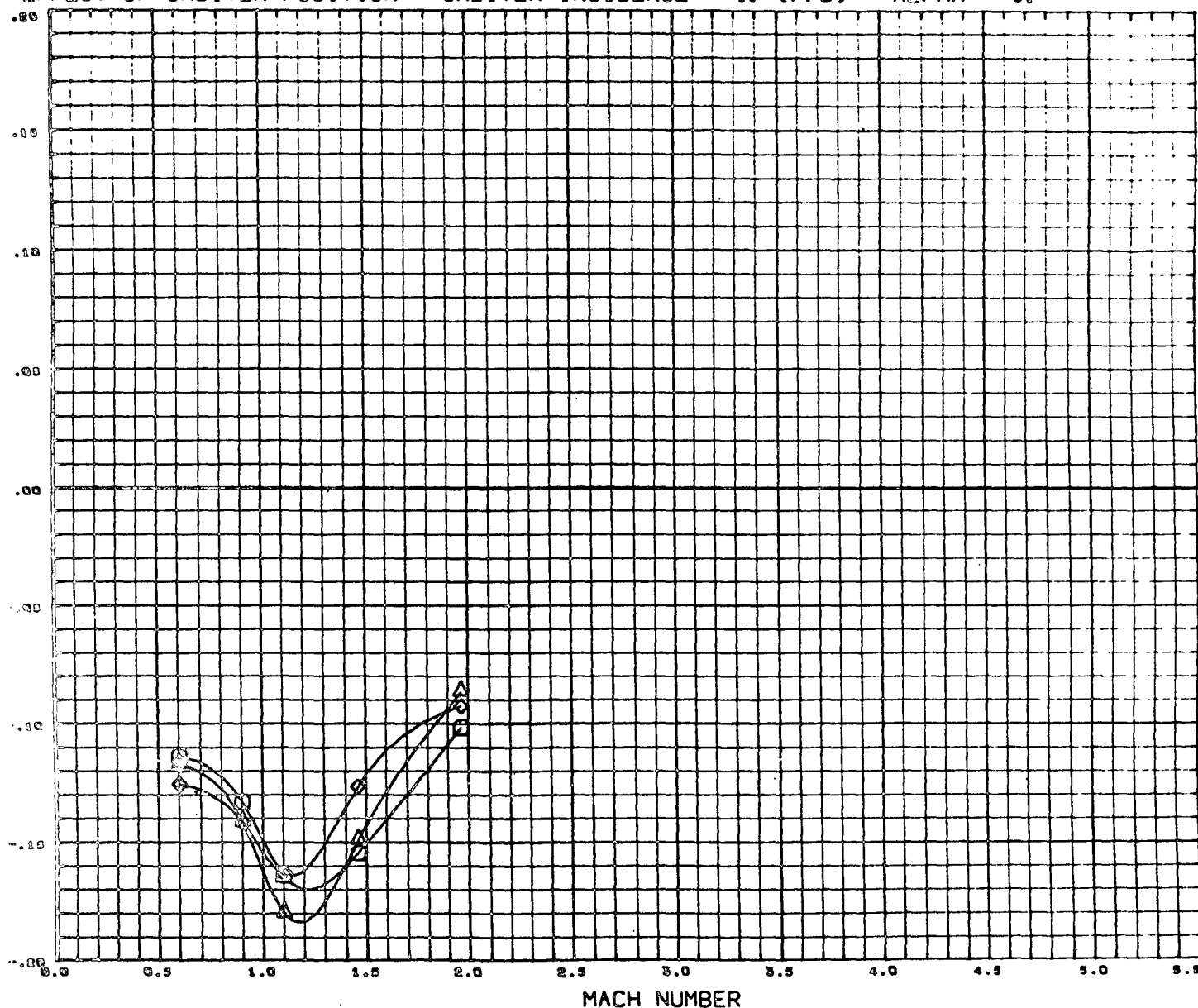
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13237A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(13240A)	MSFC490 NR/GD LAUNCH B20148W14V8+B5W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(13244A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.95

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B) ALPHA = 0.

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE

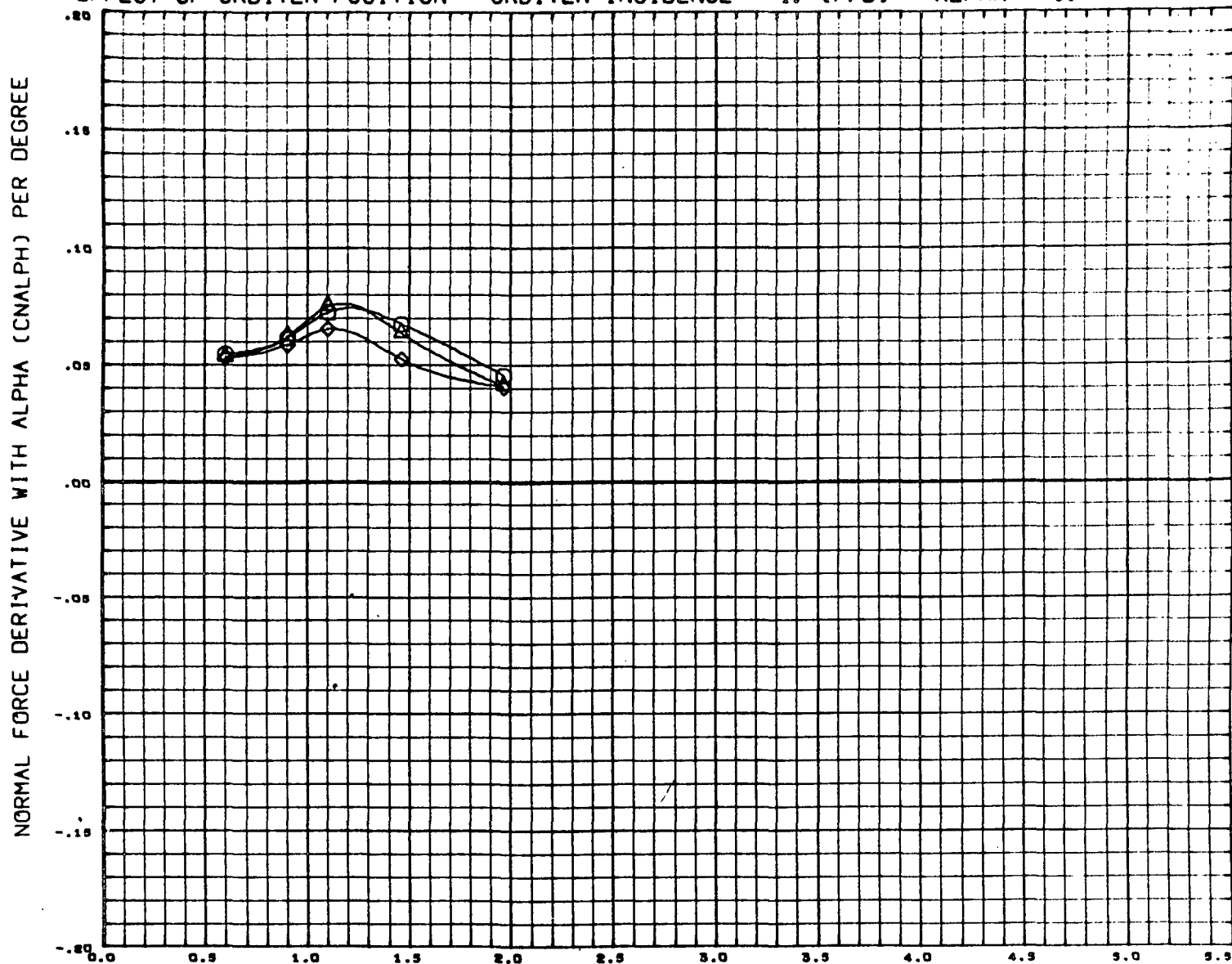


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J32374)	MSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17
(J3240A)	MSFC490 NR/GD LAUNCH B20148W14V6+B5W17V17
(J3244A)	MSFC490 NR/SE LAUNCH B20C48W14V6+B5W17V17

ORBITER POSITION	BETA	ELVATR	REFERENCE INFORMATION
1.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	0.000	0.000	LREF 3.0950 INCHES
3.000	0.000	0.000	BREF 6.0990 INCHES
			XMRF 0.0000
			YMRF 0.0000
			ZMRF 0.0000
			SCALE 0.0035 SCALE

ALPHA .00

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B) ALPHA = 0.



DATA SET SYMBOL

CONFIGURATION DESCRIPTION

(J3237A)	○	MSFC490 NR/GD LAUNCH B20C4BW14V9+BSW17V17
(J3240A)	△	MSFC490 NR/GD LAUNCH B2014BW14V8+BSW17V17
(J3244A)	◇	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17

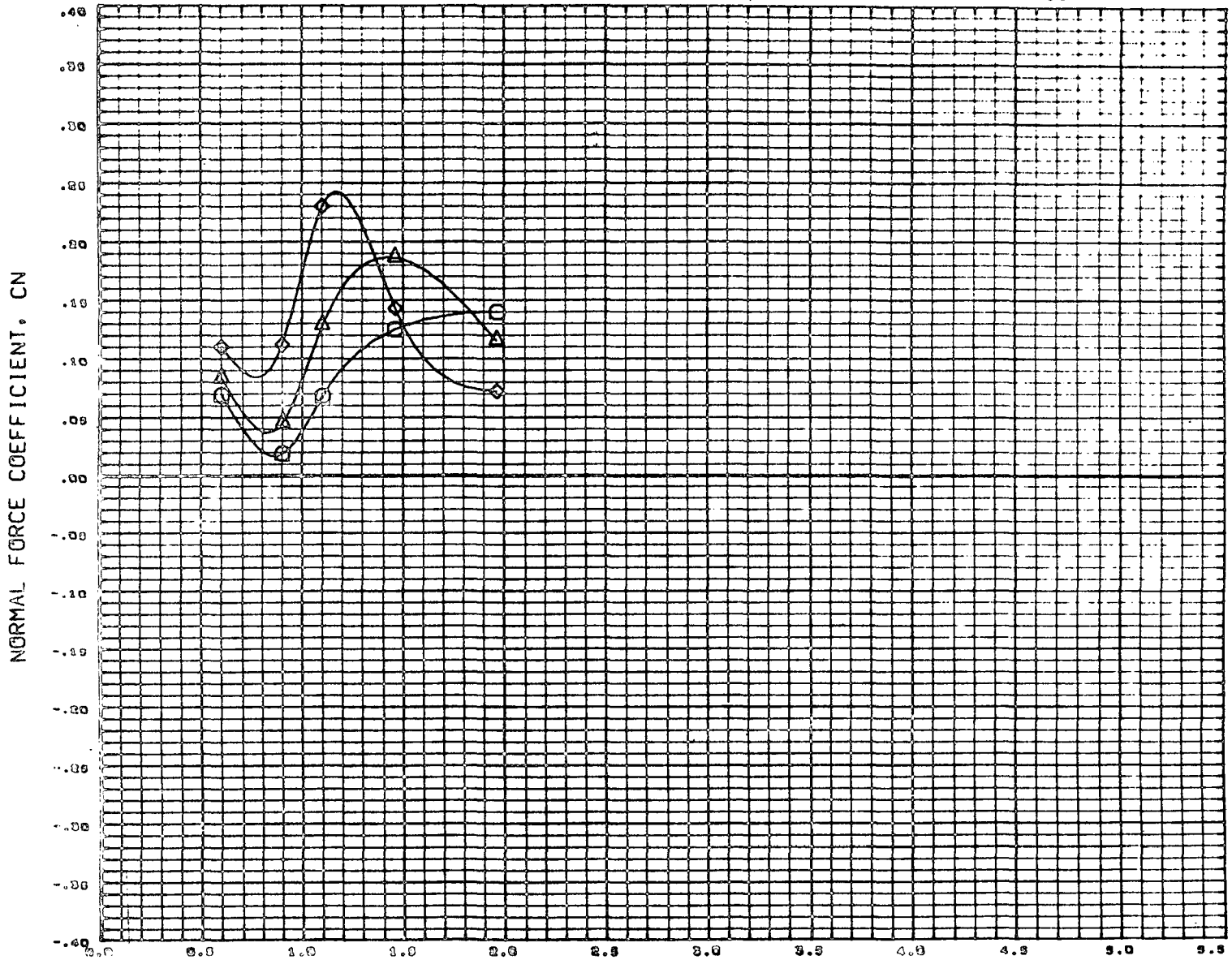
MACH NUMBER

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
4.000	1.000	0.000	0.000	SREF	15.6560 30 IN
4.000	2.000	0.000	0.000	LREF	3.0990 INCHES
4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B) ALPHA = 0.



MACH NUMBER

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(R3237A)	MSFC490 NR/CD LAUNCH B20C48W14V8+B5W17V17
(R3240A)	MSFC400 NR/CD LAUNCH B20148W14V8+B5W17V17
(R3244A)	MSFC400 NR/CD LAUNCH B20C48W14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
4.000	1.000	0.000	0.000	SREF	15.6500 SQ IN
4.000	0.000	0.000	0.000	LREF	3.0950 INCHES
4.000	0.000	0.000	0.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0008 SCALE

ALPHA .00

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B) ALPHA = 0.



DATA SET:SYMBOL	CONFIGURATION DESCRIPTION
(K3237A) ○	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17
(K3240A) △	MSFC490 NR/GD LAUNCH 820148W14V8+85W17V17
(K3244A) ◇	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17

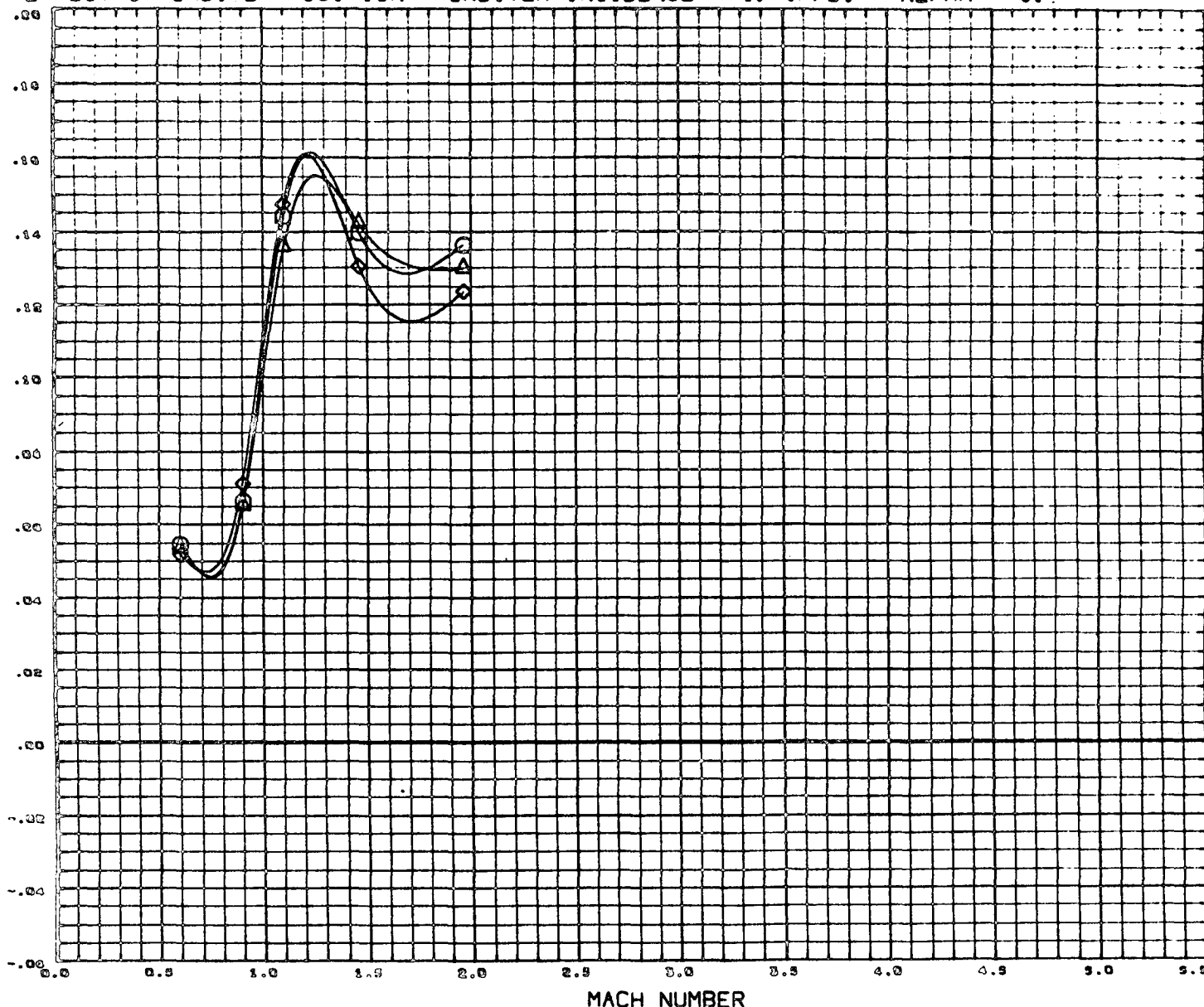
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
4.000	2.000	0.000	0.000	LREF	3.0990 INCHES
4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 4. (P/B) ALPHA = 0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF

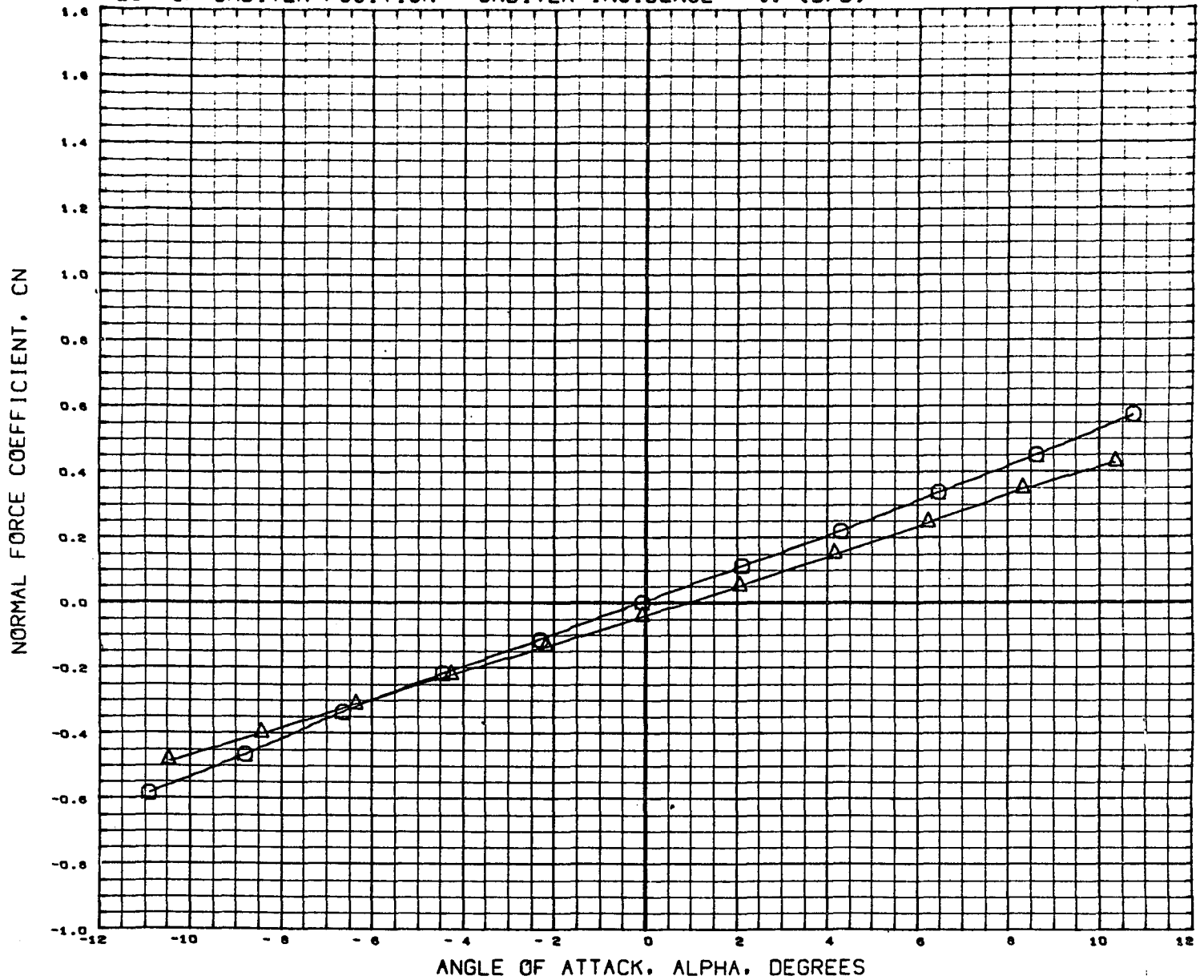


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(K3237A)	MSPC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	4.000	1.000	0.000	0.000	SREF	15.6560 SQ IN
(K3240A)	MSPC490 NR/GD LAUNCH 82014BW14V0+85W17V17	4.000	2.000	0.000	0.000	LREF	3.0950 INCHES
(K3240A)	MSPC490 NR/GD LAUNCH 820C4BW14V0+85W17V17	4.000	3.000	0.000	0.000	BREF	6.0990 INCHES
						XHRP	0.0000
						YHRP	0.0000
						ZHRP	0.0000
						SCALE	0.0033 SCALE

ALPHA .00

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

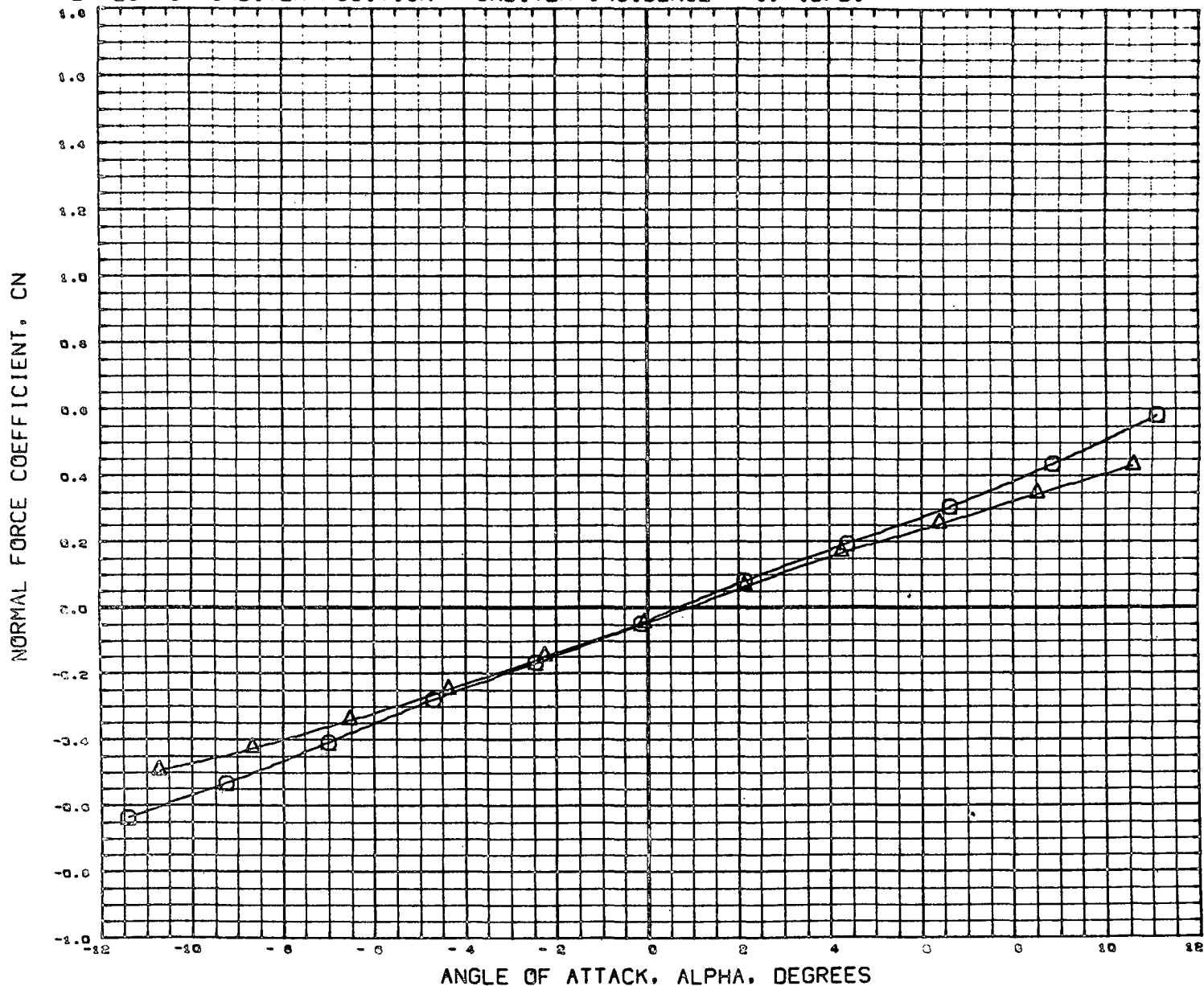


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13250A) Q	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	13.6560	SQ IN
(13254A) Δ	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	5.000	0.000	0.000	LREF	3.0950	INCHES
						BREF	6.0950	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .60

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



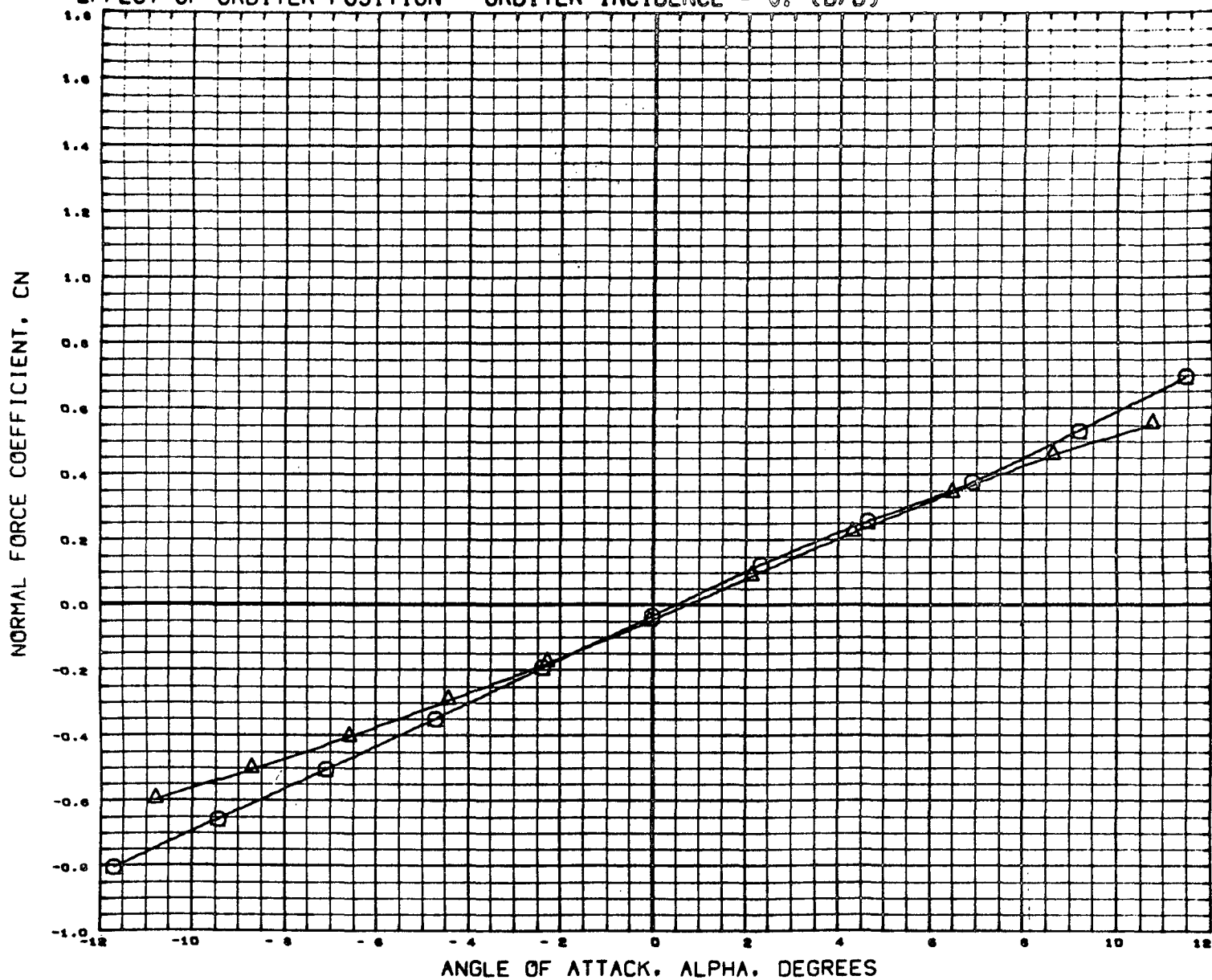
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	4.000	0.000	0.000	SREF	19.6560 SQ IN
(13254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	3.000	0.000	0.000	LREF	9.0950 INCHES
						BREF	0.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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SC.4.

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)



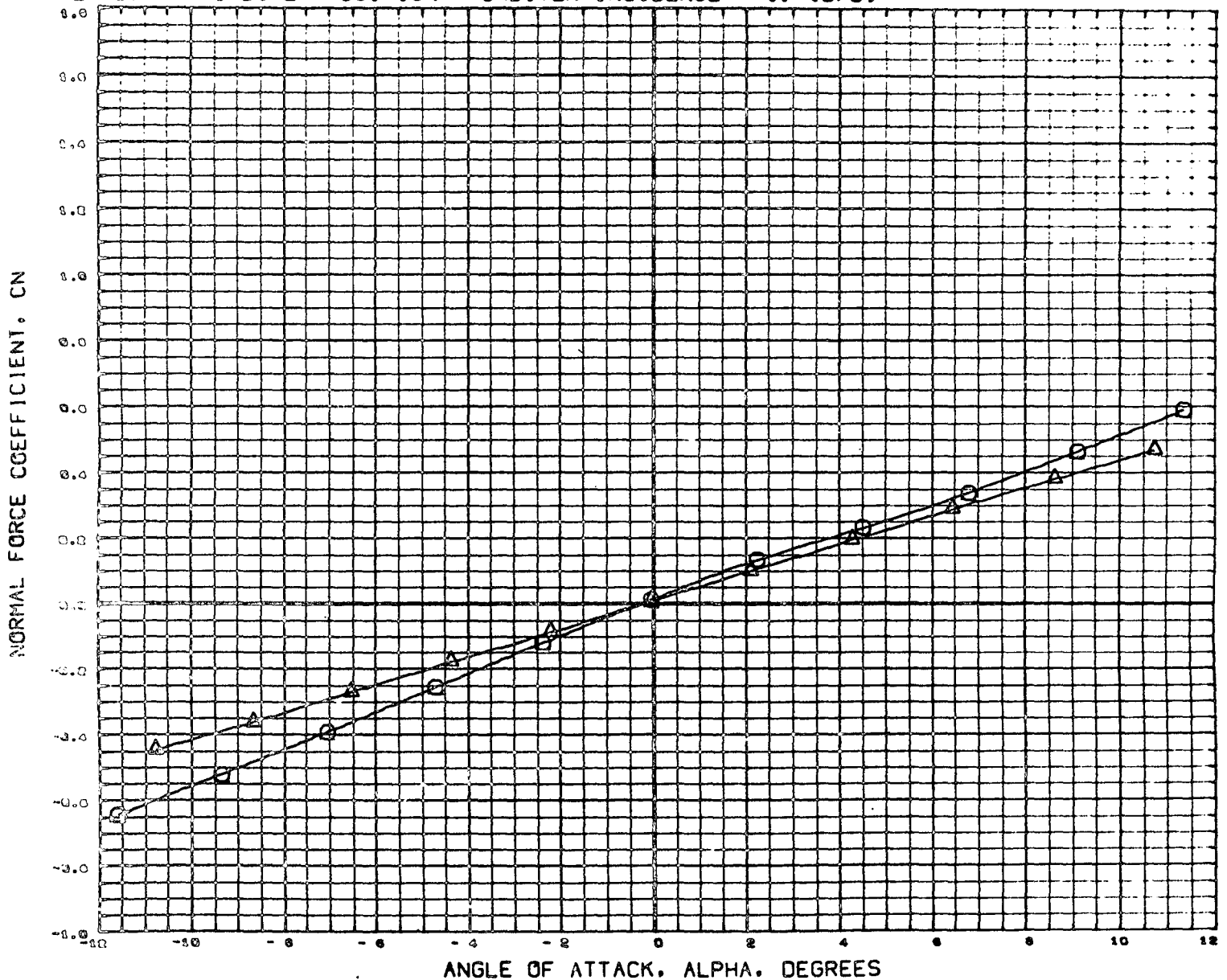
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17
(H3254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17

ORBITN	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 50 IN
0.000	5.000	0.000	0.000	LREF 3.0930 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.10

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)

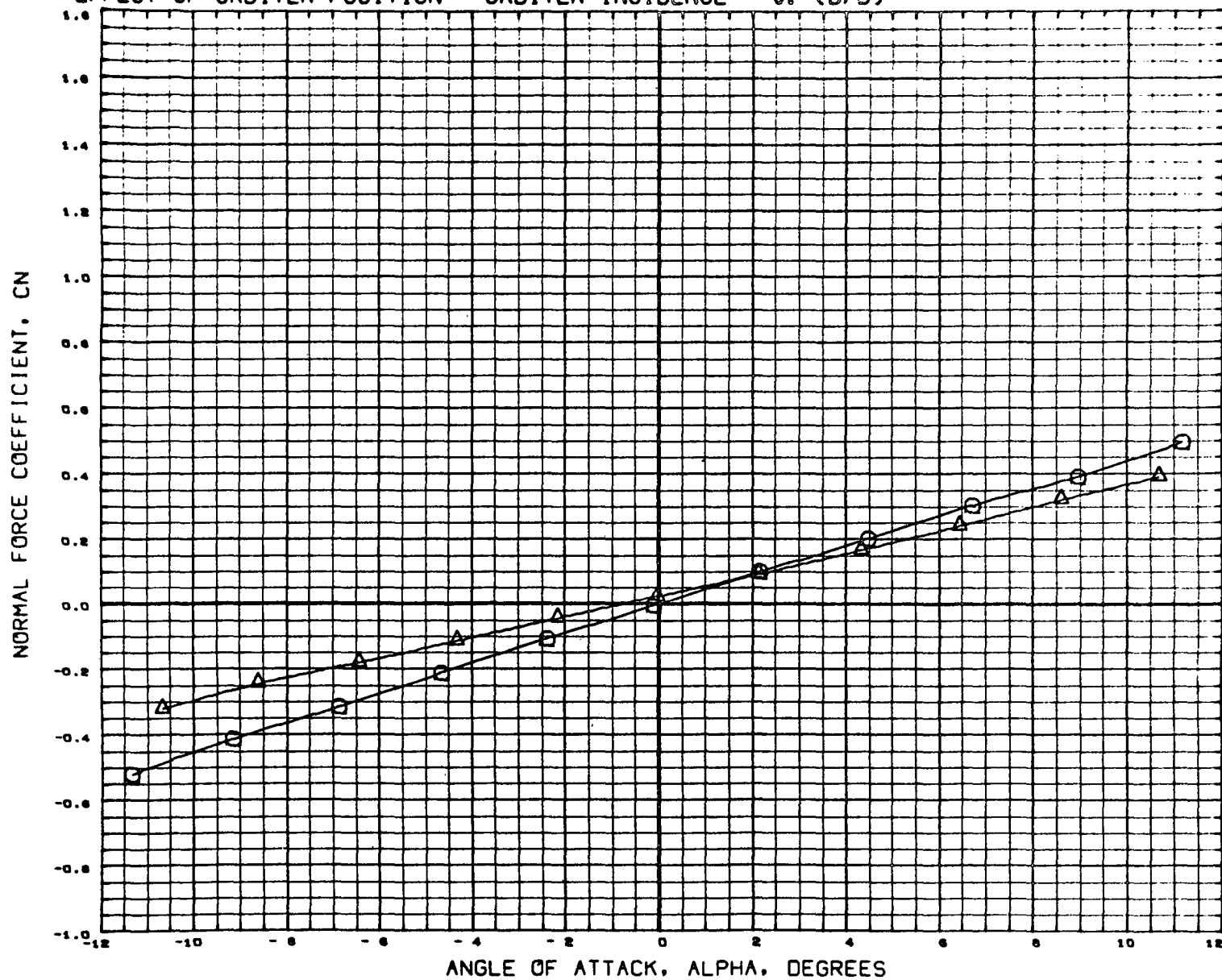


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(13250A)	MSFC490 NR/60 LAUNCH 820C4BW14V8+85W17V17	0.000	4.000	0.000	0.000	SREF	15.6560	50 IN
(13254A)	MSFC490 NR/60 LAUNCH 820C4BW14V8+85W17V17	0.000	5.000	0.000	0.000	LREF	3.0990	INCHES
						BREF	6.0990	INCHES
						XMHP	0.0000	
						YMHP	0.0000	
						ZMHP	0.0000	
						SCALE	0.0035	SCALE

MACH 1.46

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13250A)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17
(13254A)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17

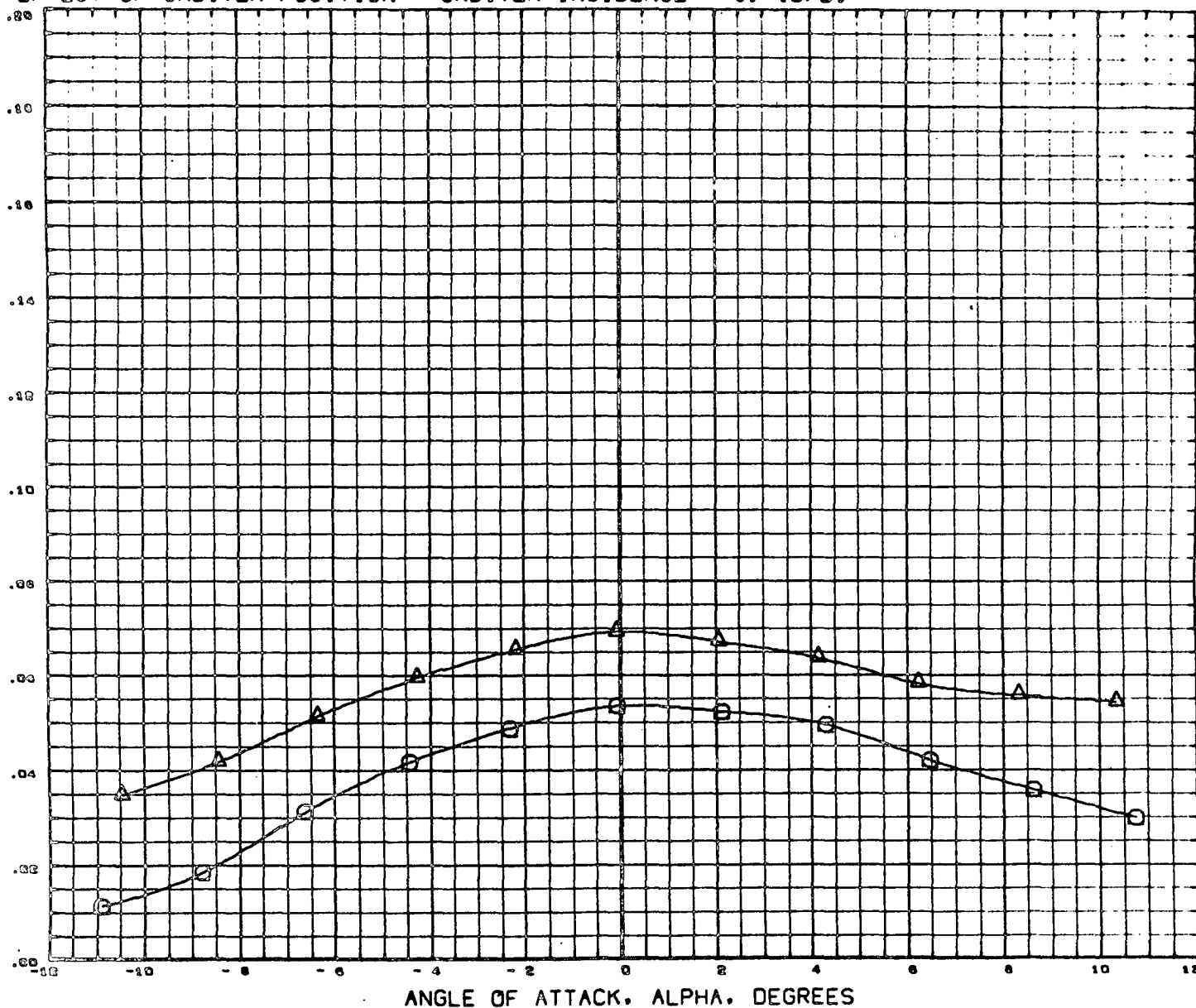
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.8560 30 IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.96

PAGE 245

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

FOREBODY AXIAL FORCE COEFFICIENT, CAF



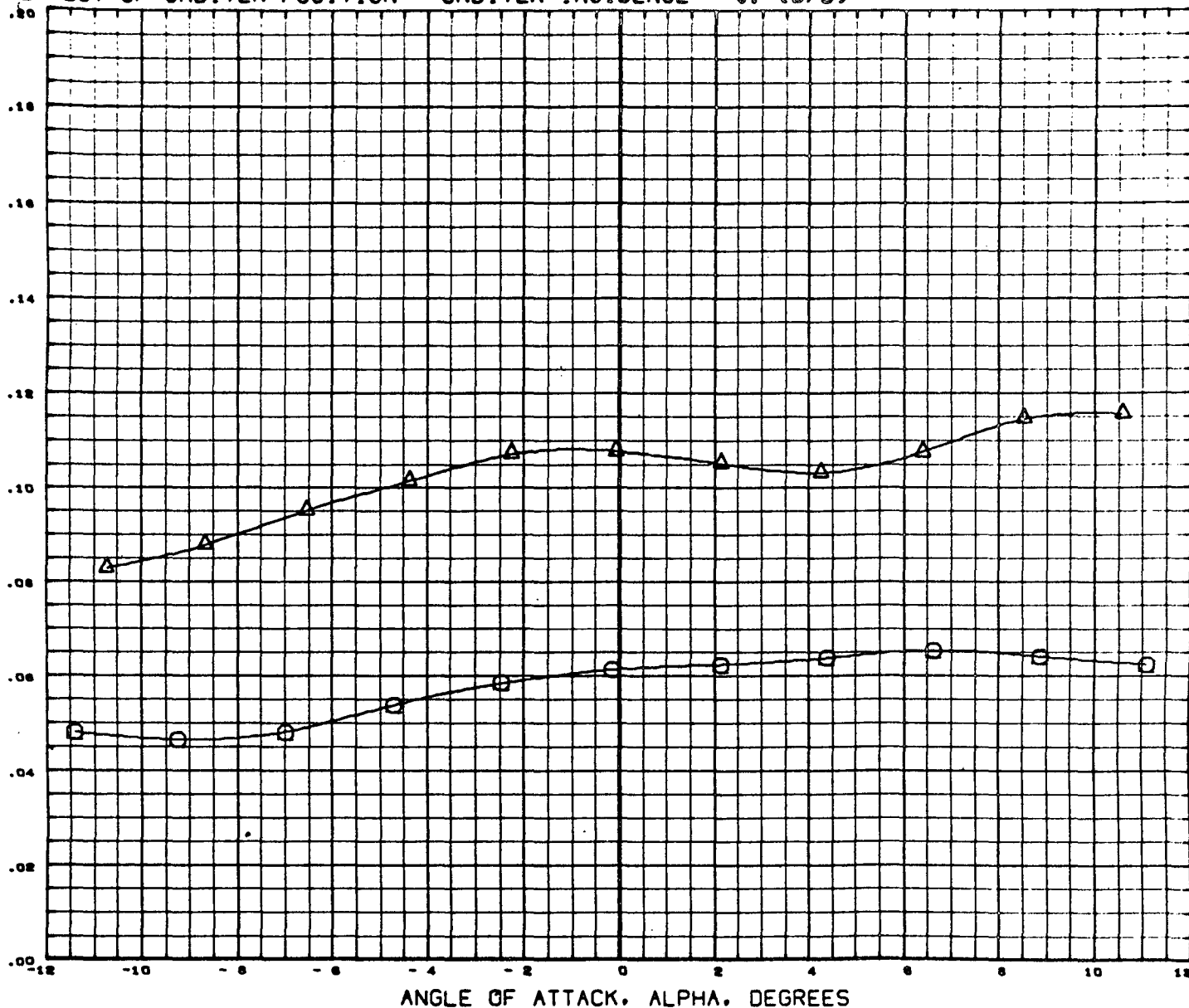
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13290A)	MSFC400 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 30 IN
(13296A)	MSFC400 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	8.000	0.000	0.000	LREF	3.0990 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

PAGE 246

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

FOREBODY AXIAL FORCE COEFFICIENT, CAF



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13230A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(13234A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

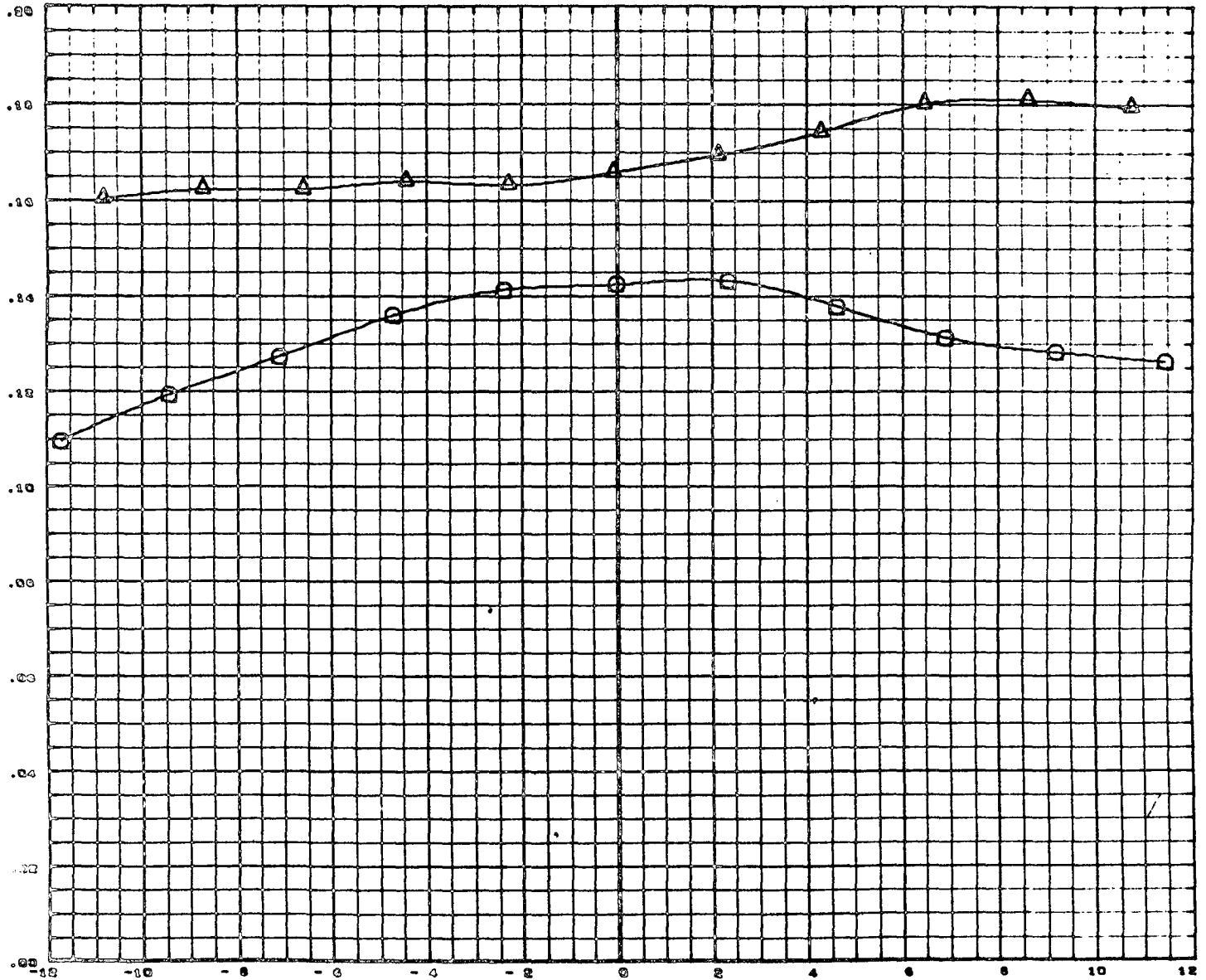
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	0.000	0.000	LREF 3.0930 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .90

PAGE 247

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

FOREBODY AXIAL FORCE COEFFICIENT, CAF



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13290A)	MSFC490 NR/60 LAUNCH 820C4BW14V8+85W17V17
(13294A)	MSFC490 NR/60 LAUNCH 820C4BW14V8+85W17V17

ORBITN	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	9.000	0.000	0.000

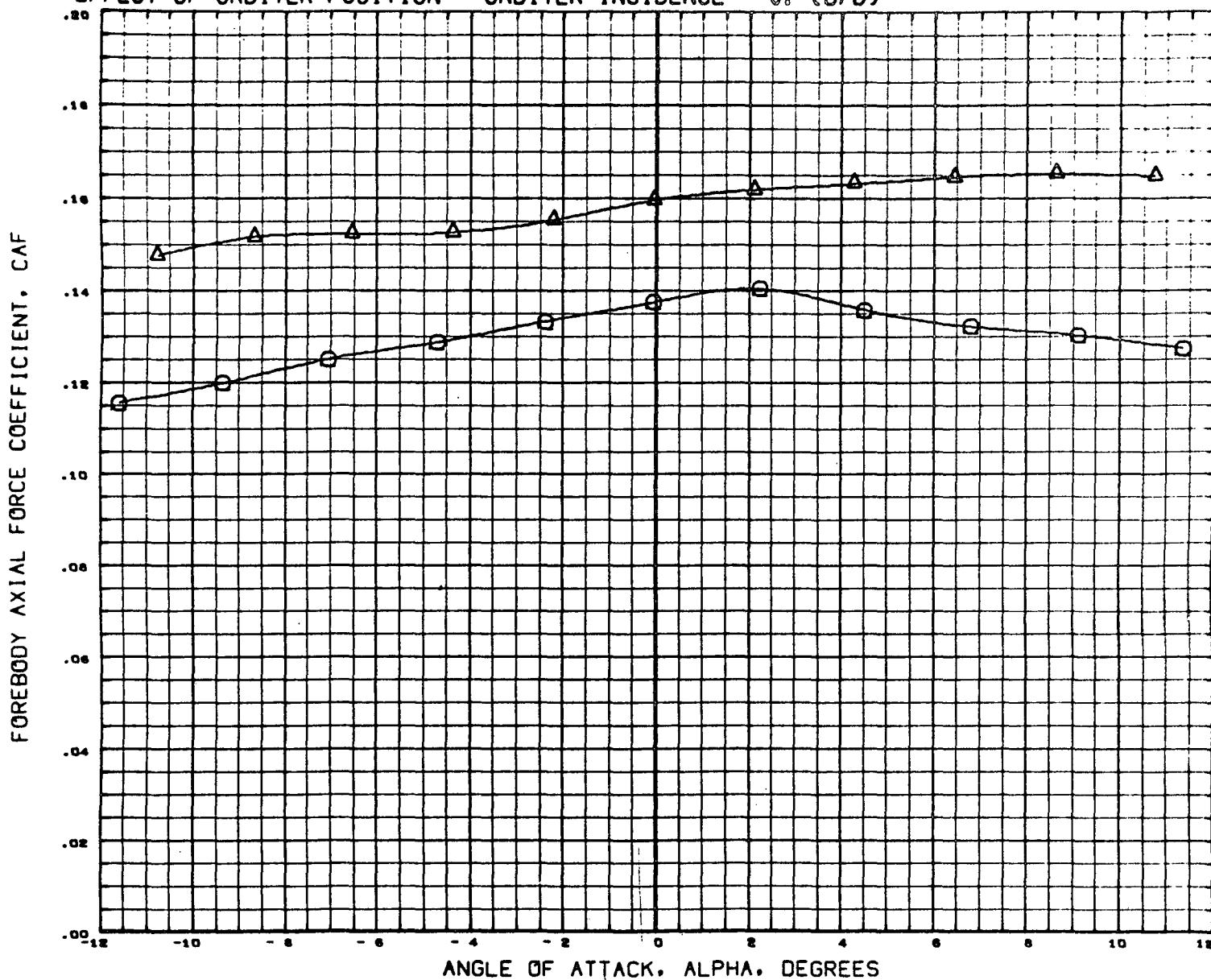
REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0990 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0039 SCALE

MACH

1.10

PAGE 248

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/8)

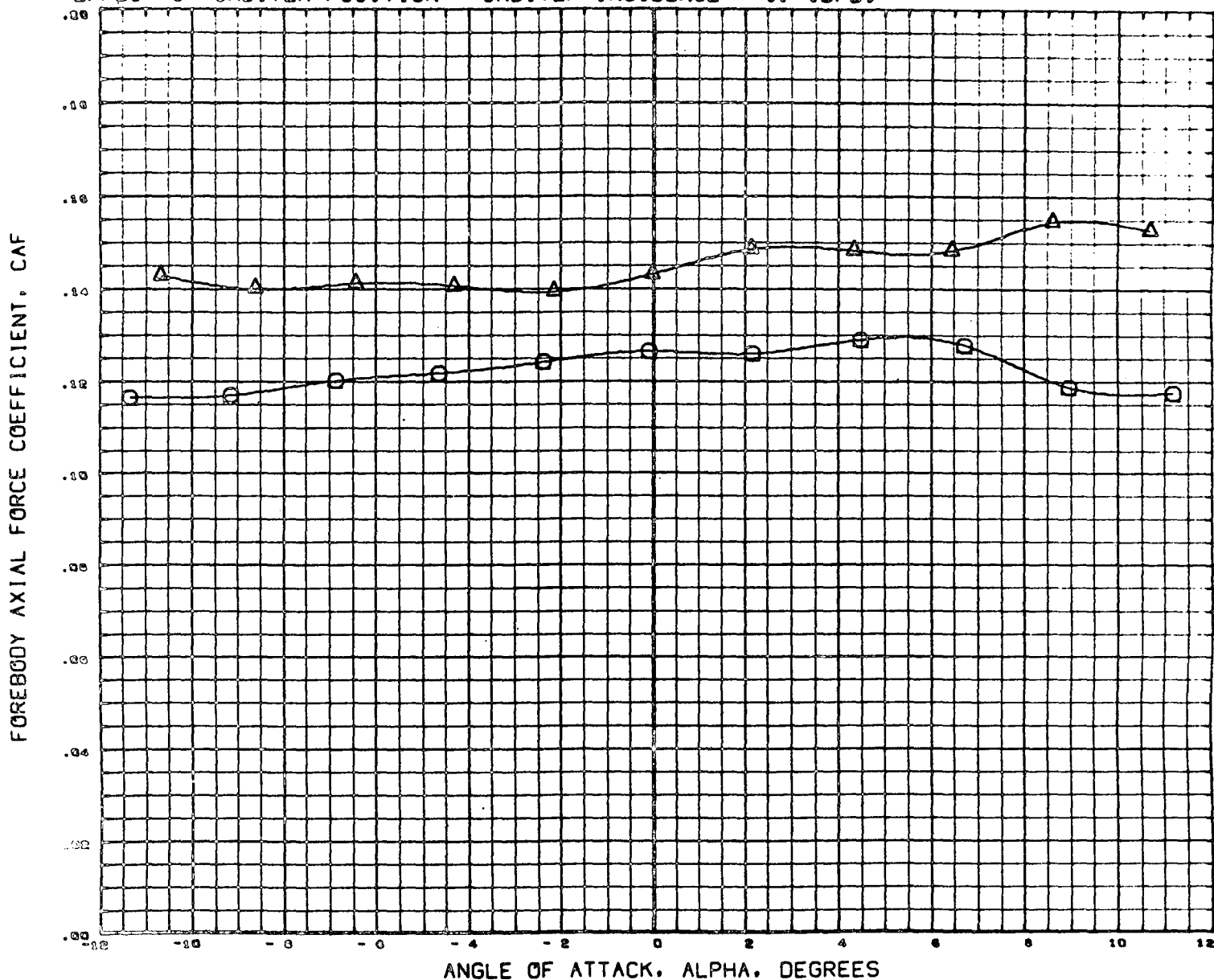


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBITER	POSITION	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(13254A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17	0.000	5.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13290A)	MSFC400 NR/60 LAUNCH B20C4BW14V8+B5W17V17
(43290A)	MSFC400 NR/60 LAUNCH B20C4BW14V8+B5W17V17

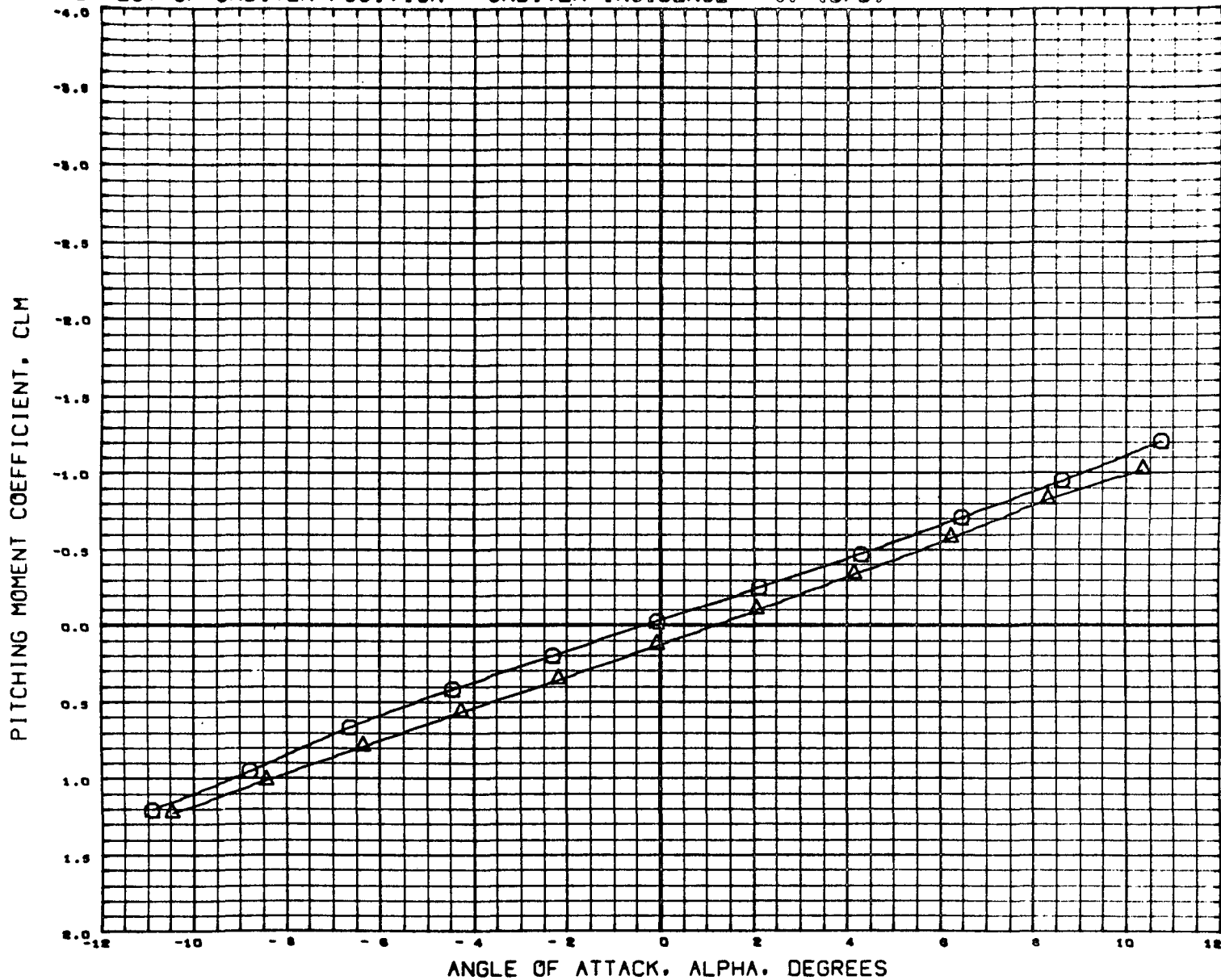
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	9.000	0.000	0.000

REFERENCE INFORMATION		
SREF	19.6500	30 IN
LREF	3.0950	INCHES
GREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.96

PAGE 250

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

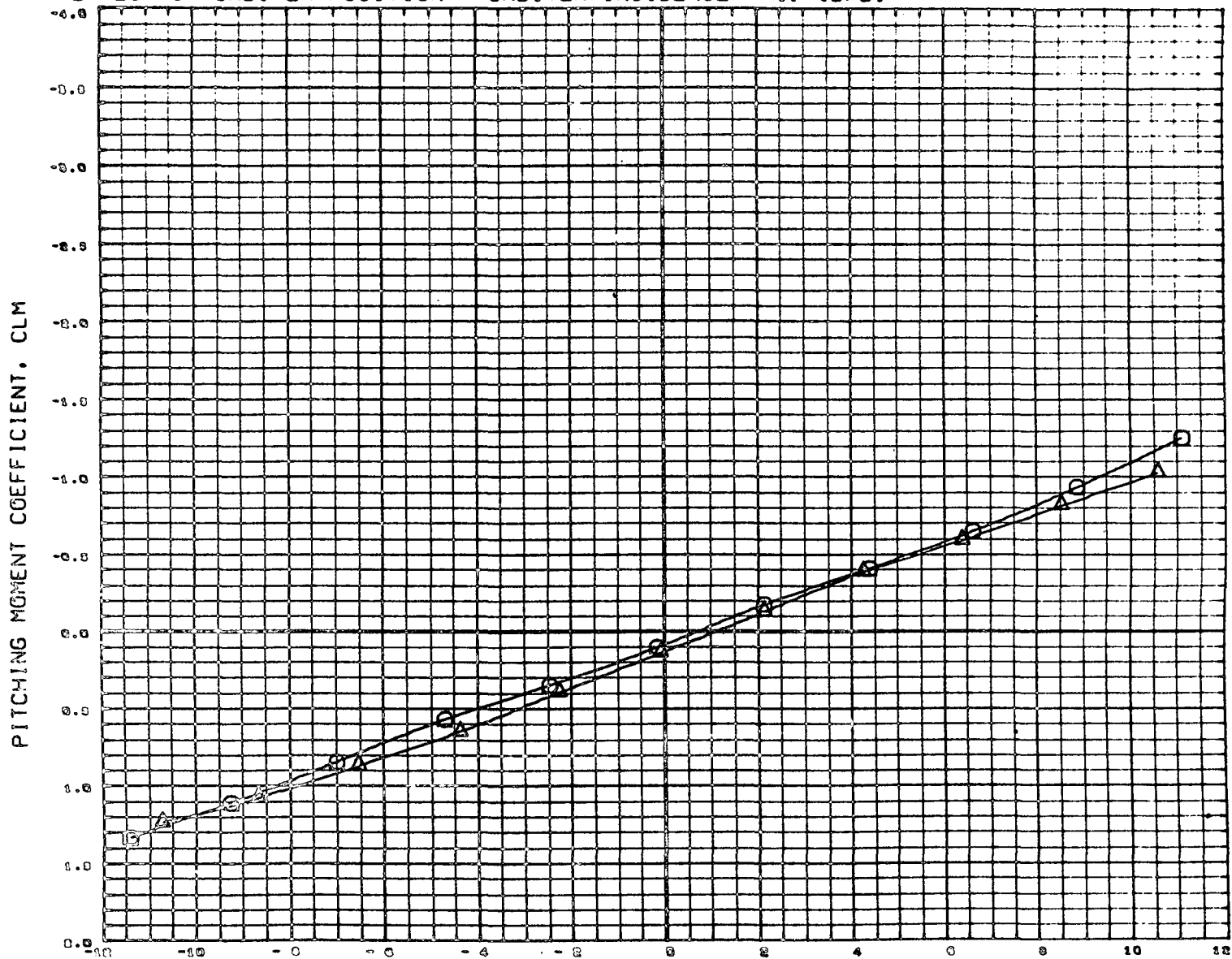


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	M3FC490 NR/GD LAUNCH B20C48W14V6+B3W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(13254A)	M3FC490 NR/GD LAUNCH B20C48W14V6+B3W17V17	0.000	5.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

PAGE 251

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



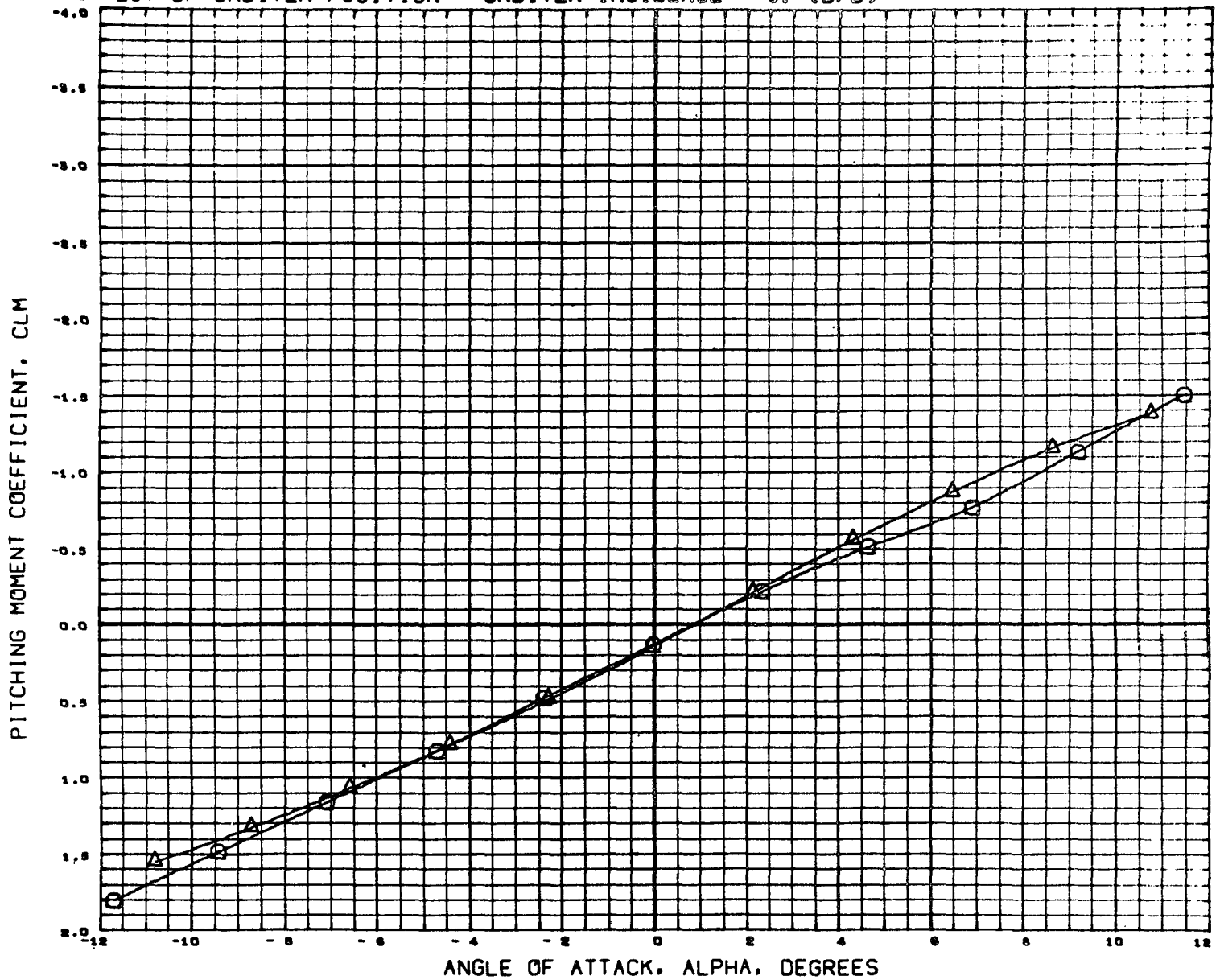
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(19290A)	MSPC490 NR/60 LAUNCH B20C4BW14V8+B5W17V17
(19294A)	MSPC490 NR/60 LAUNCH B20C4BW14V8+B5W17V17

ORBITER	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 30 IN
0.000	8.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0033 SCALE

MACH .90

PAGE 252

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

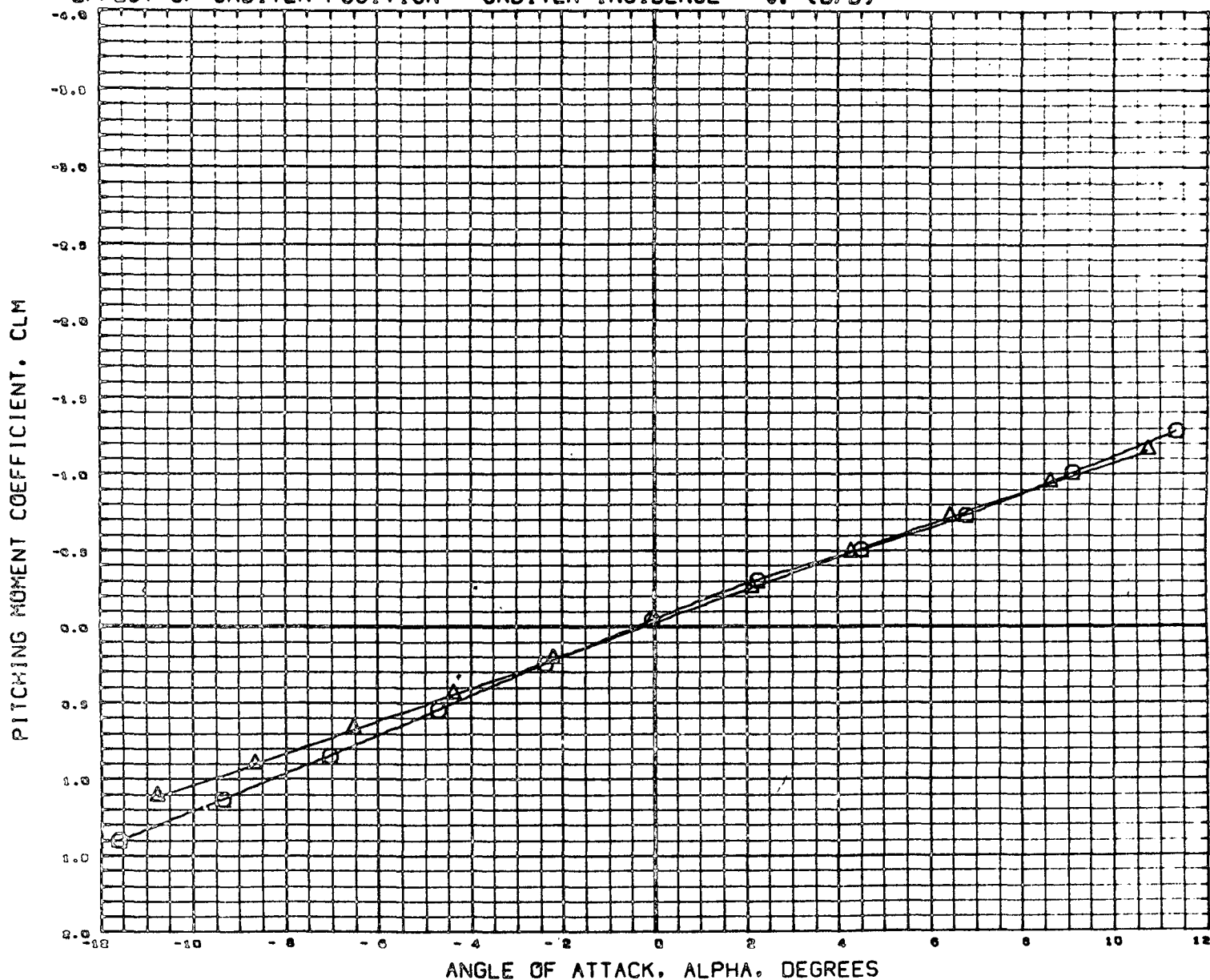


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B3W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(13254A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B3W17V17	0.000	9.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13290A) MSFC490 NR/GD LAUNCH 820C4BW14V8+83W17V17
 (13254A) MSFC490 NR/GD LAUNCH 820C4BW14V8+83W17V17

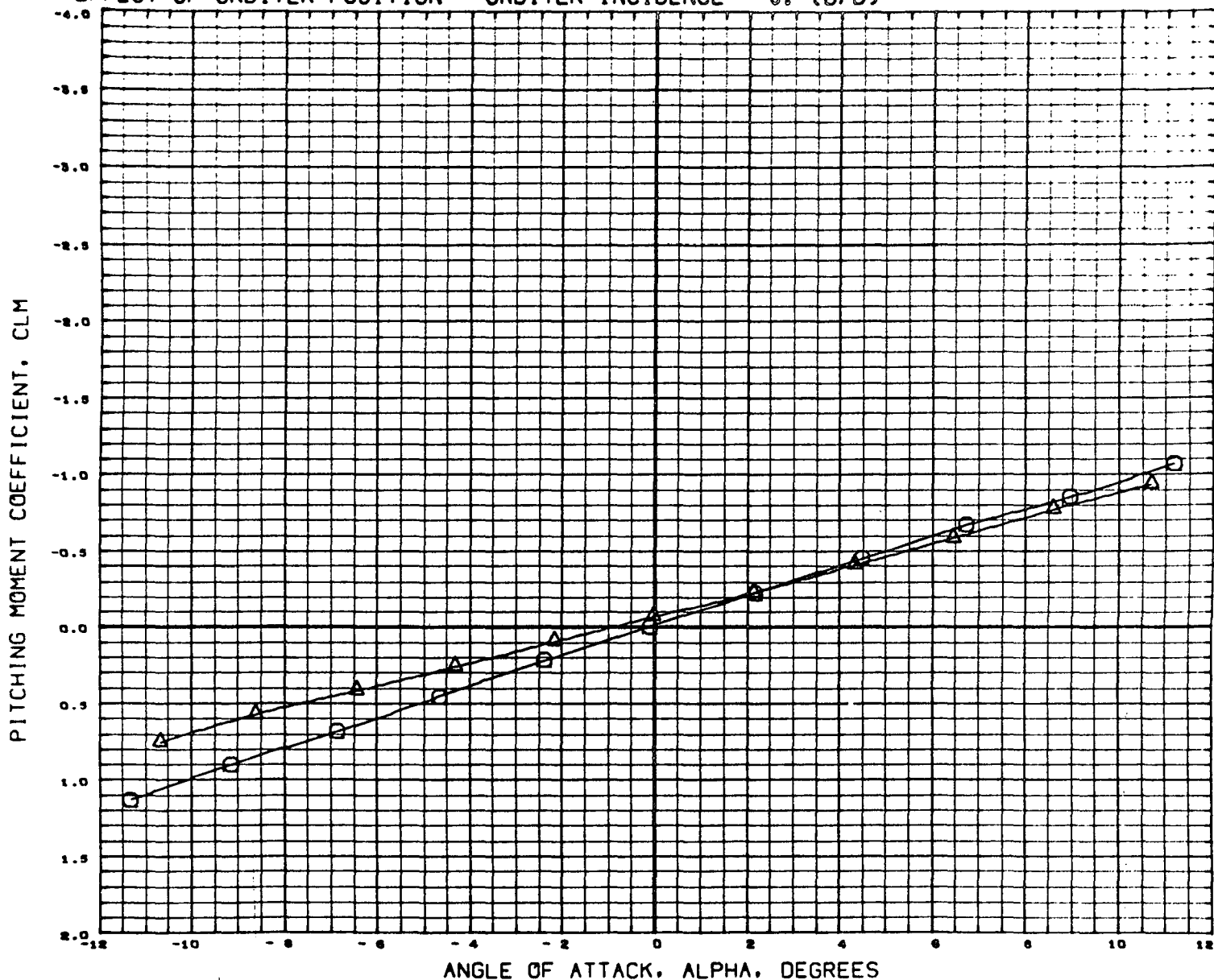
ORBINC POSITN BETA ELVATR
 0.000 4.000 0.000 0.000
 0.000 5.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6360 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRF 0.0000
 YMRF 0.0000
 ZMRF 0.0000
 SCALE 0.0035 SCALE

MACH 1.46

PAGE 254

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

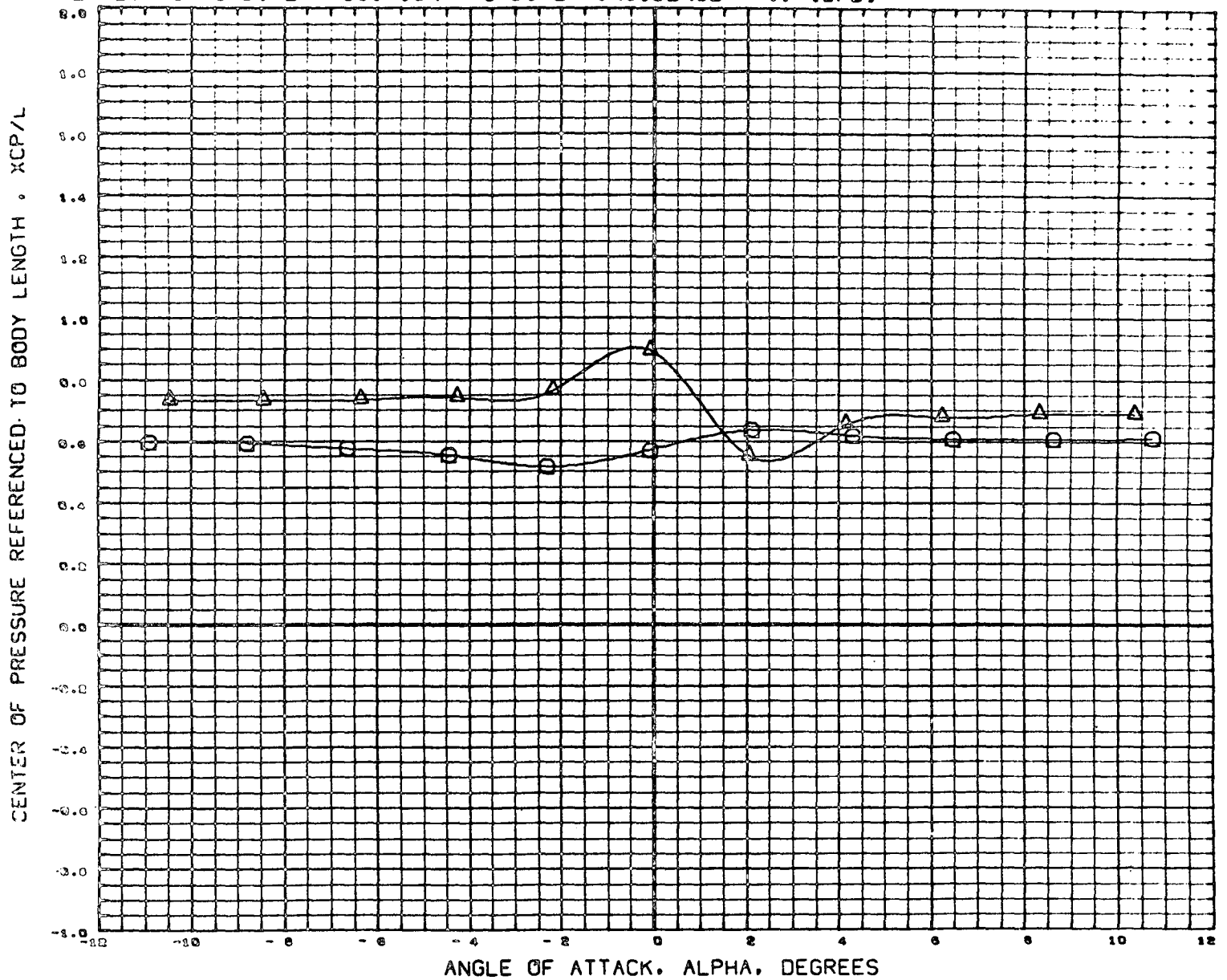


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13290A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(13294A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	5.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)

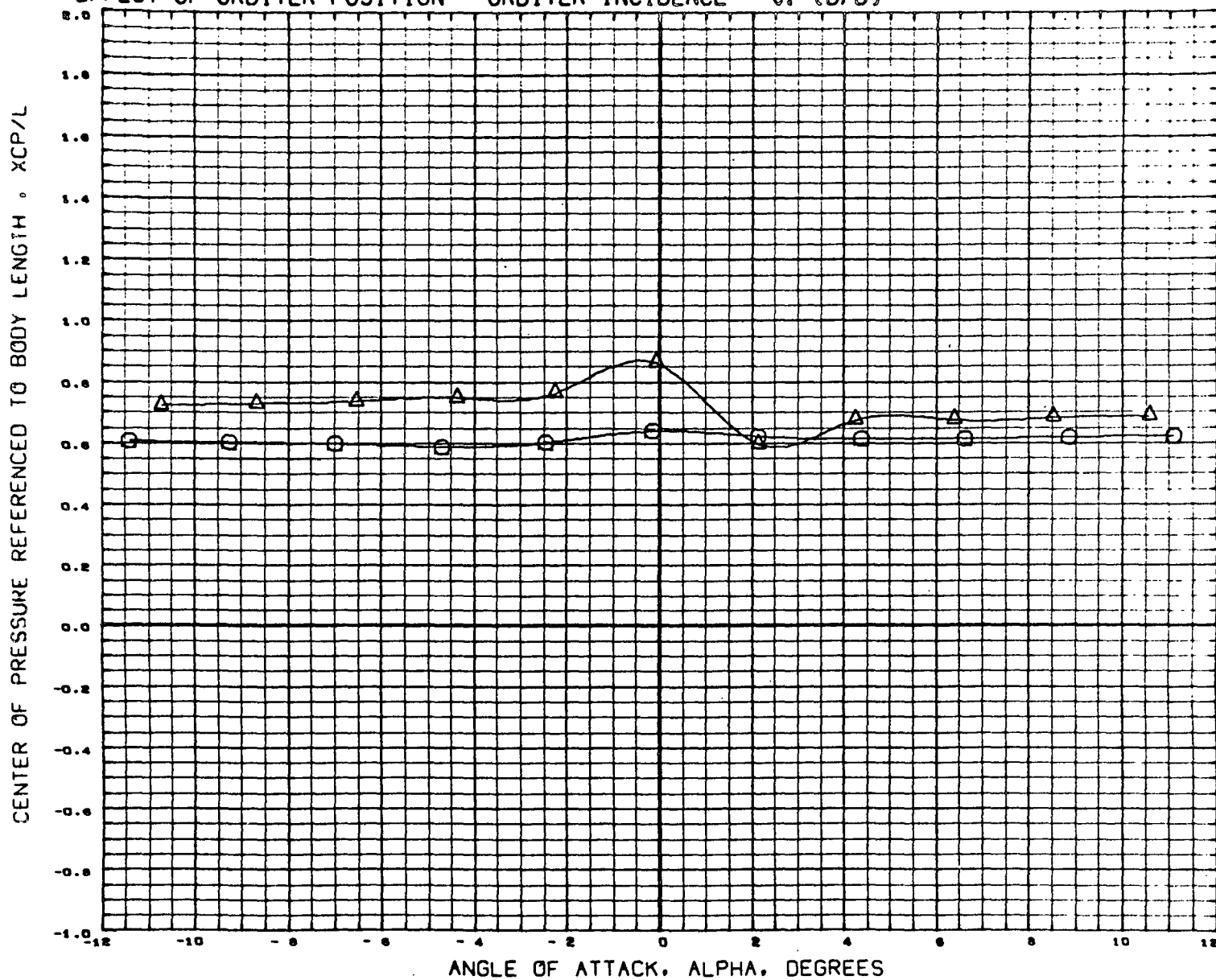


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13290A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(13294A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	9.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	0.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH

.60

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



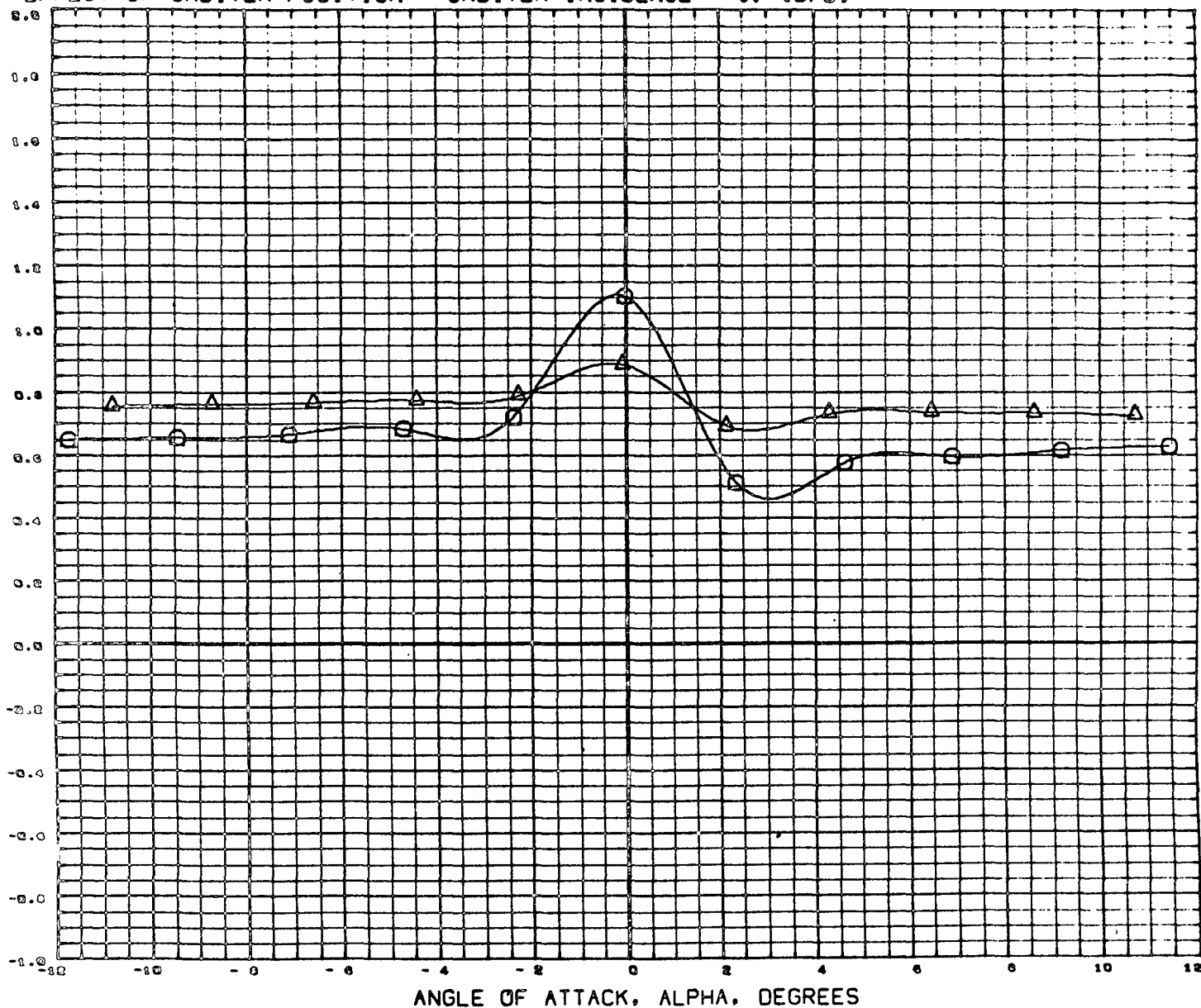
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(13254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	5.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90


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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

CENTER OF PRESSURE REFERENCED TO BODY LENGTH • XCP/L



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(13290A)  MSPC400 NR/GD LAUNCH B20C4BW14V8+B3W17V17

(H3294A)  MSPC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBITER	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	5.000	0.000	0.000

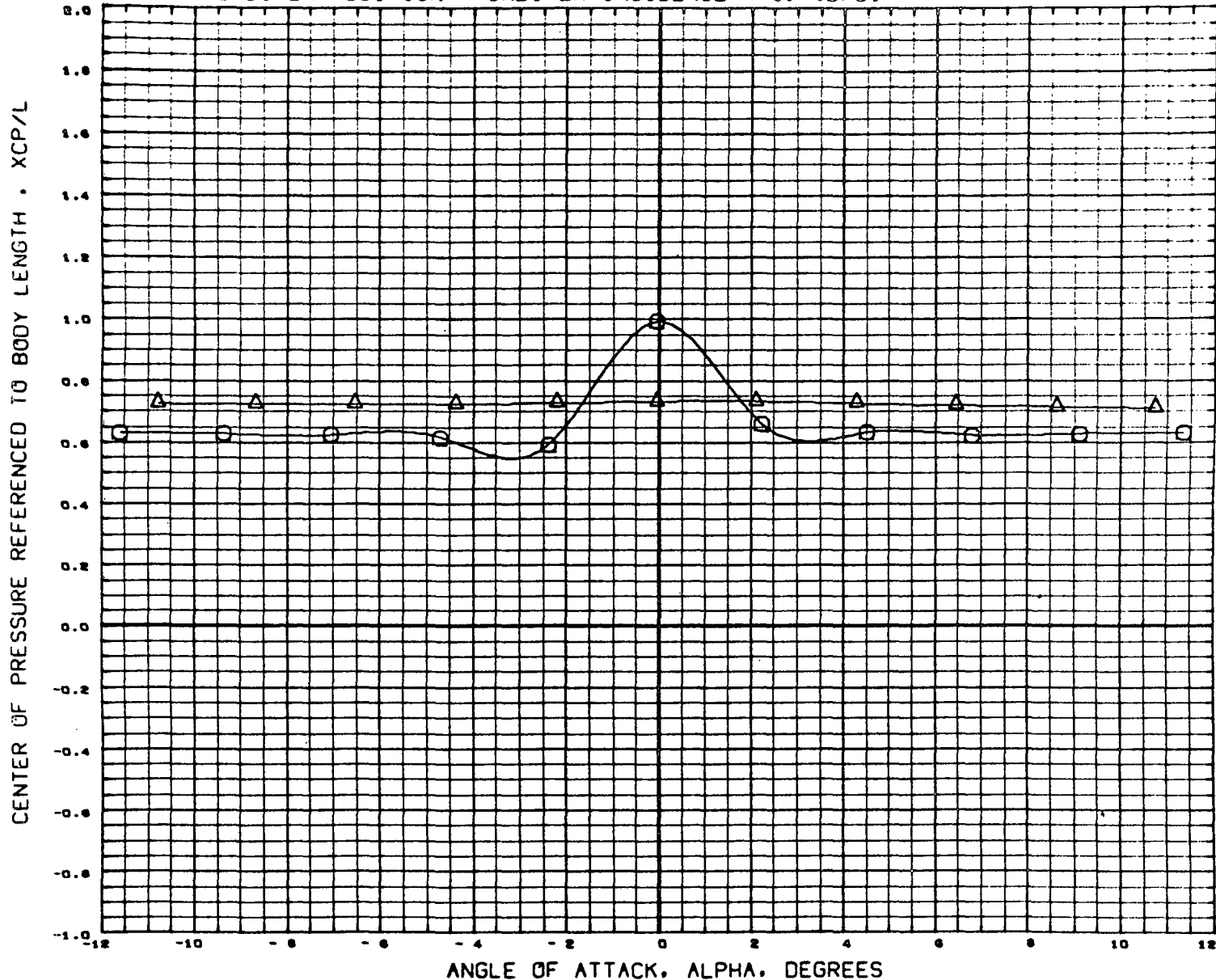
REFERENCE INFORMATION	
SREF	15.6560 50 IN
LREF	3.0950 INCHES
BREF	0.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH

1.10

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



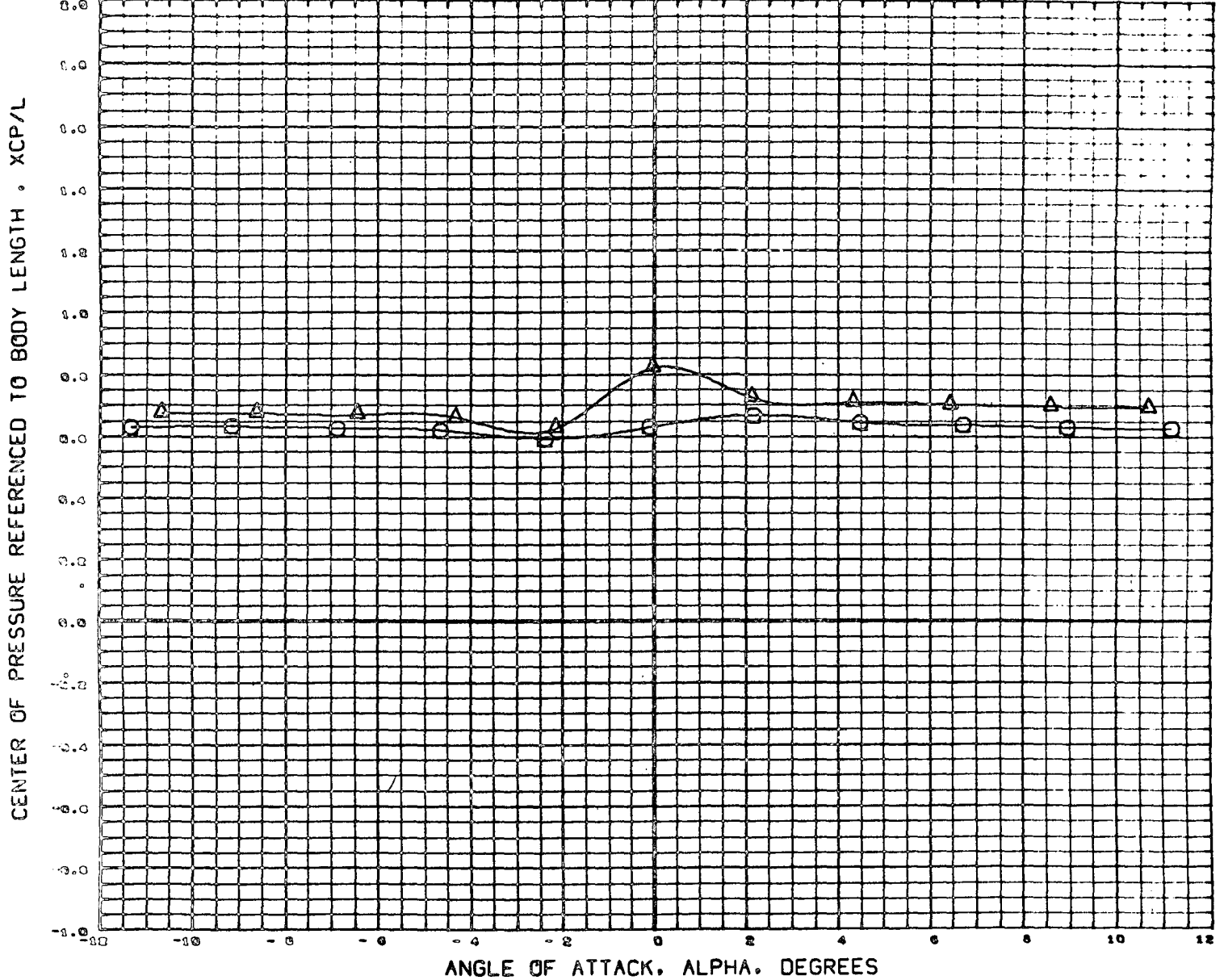
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13290A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(H3254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBITER	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.46

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13290A)	MSPC490 NR/GD LAUNCH B20C4BW14V8+B9W17V17
(M3294A)	MSPC490 NR/GD LAUNCH B20C4BW14V8+B9W17V17

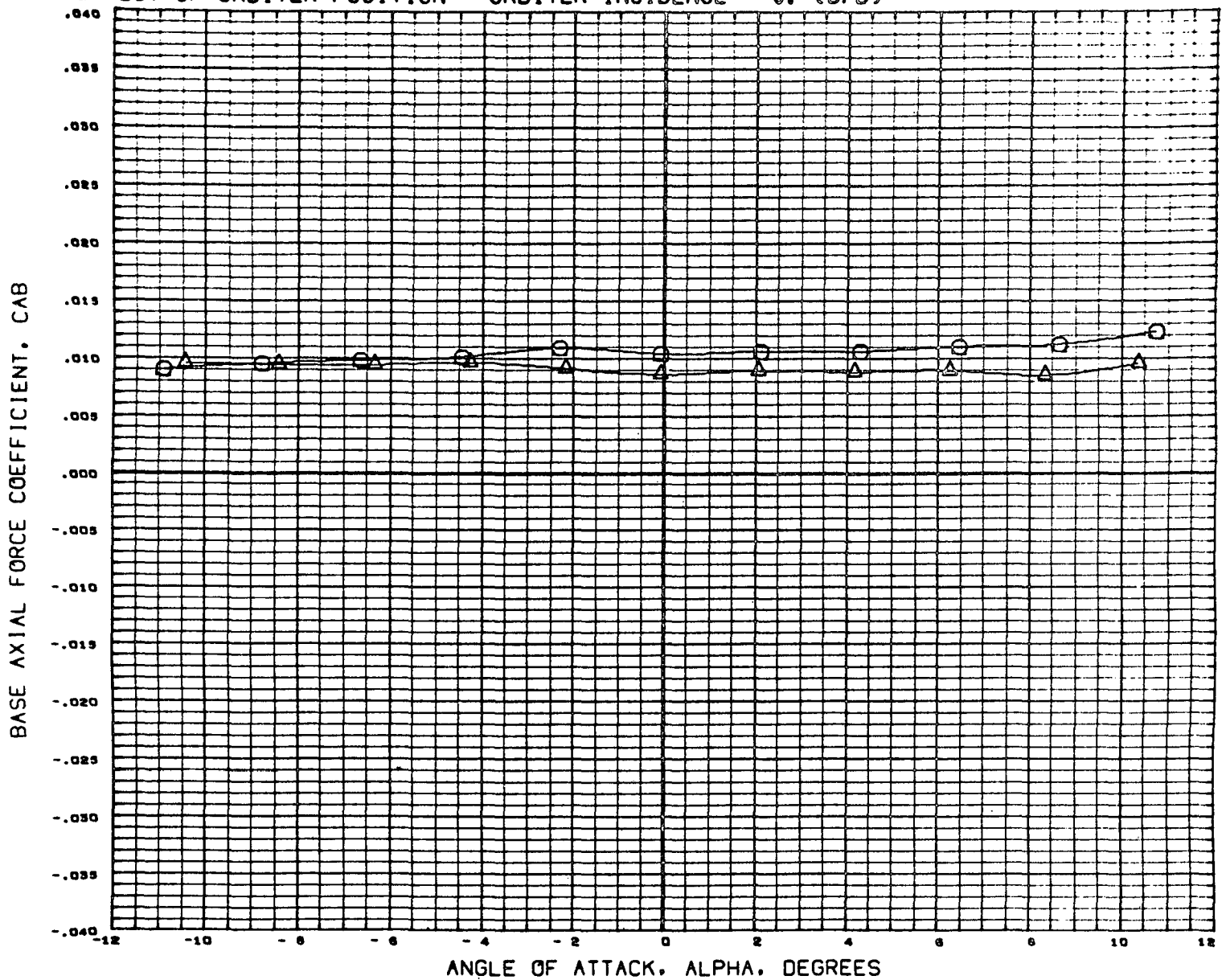
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	5.000	0.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.96

PAGE 260

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)

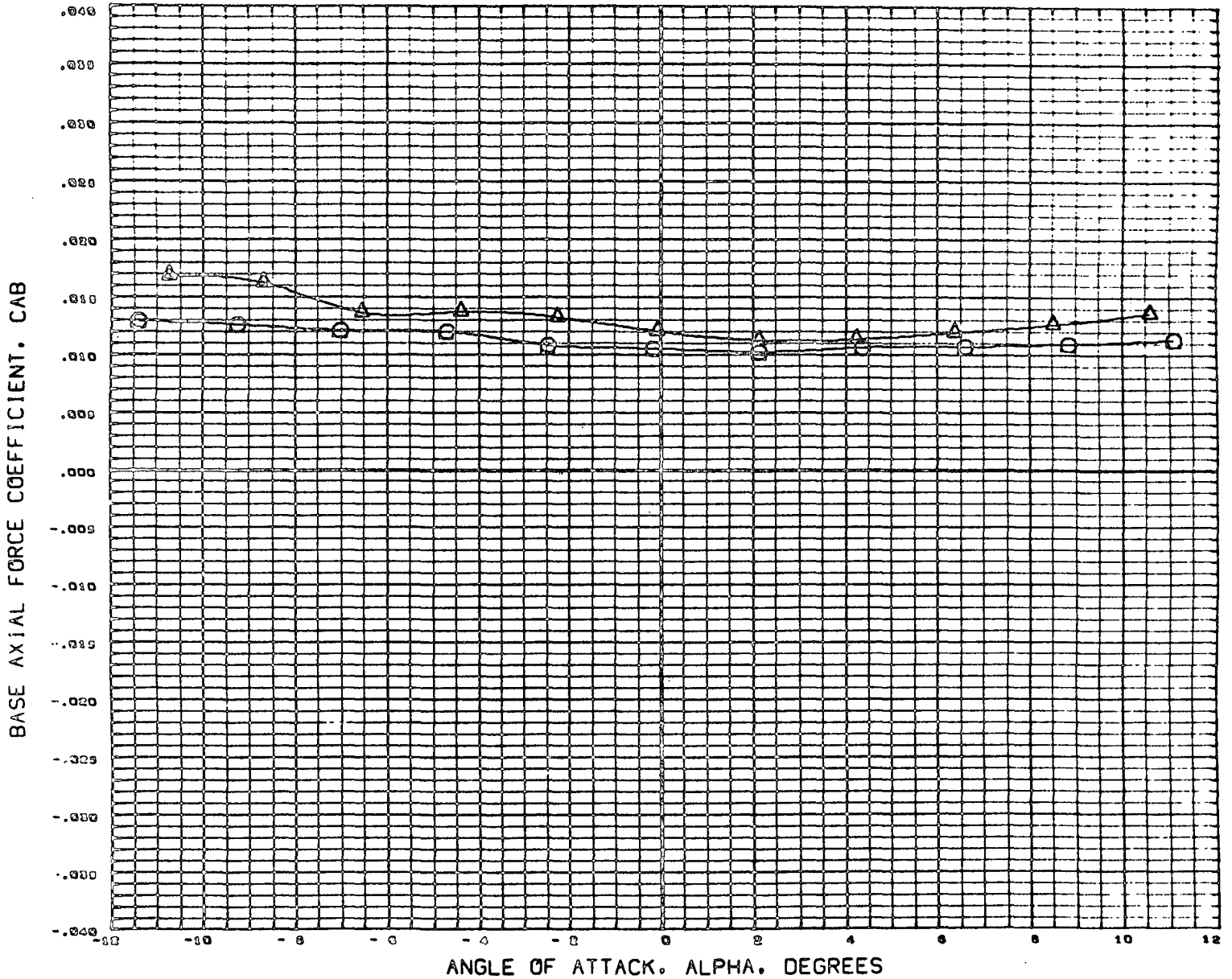


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(13254A)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17	0.000	9.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

PAGE 261

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)

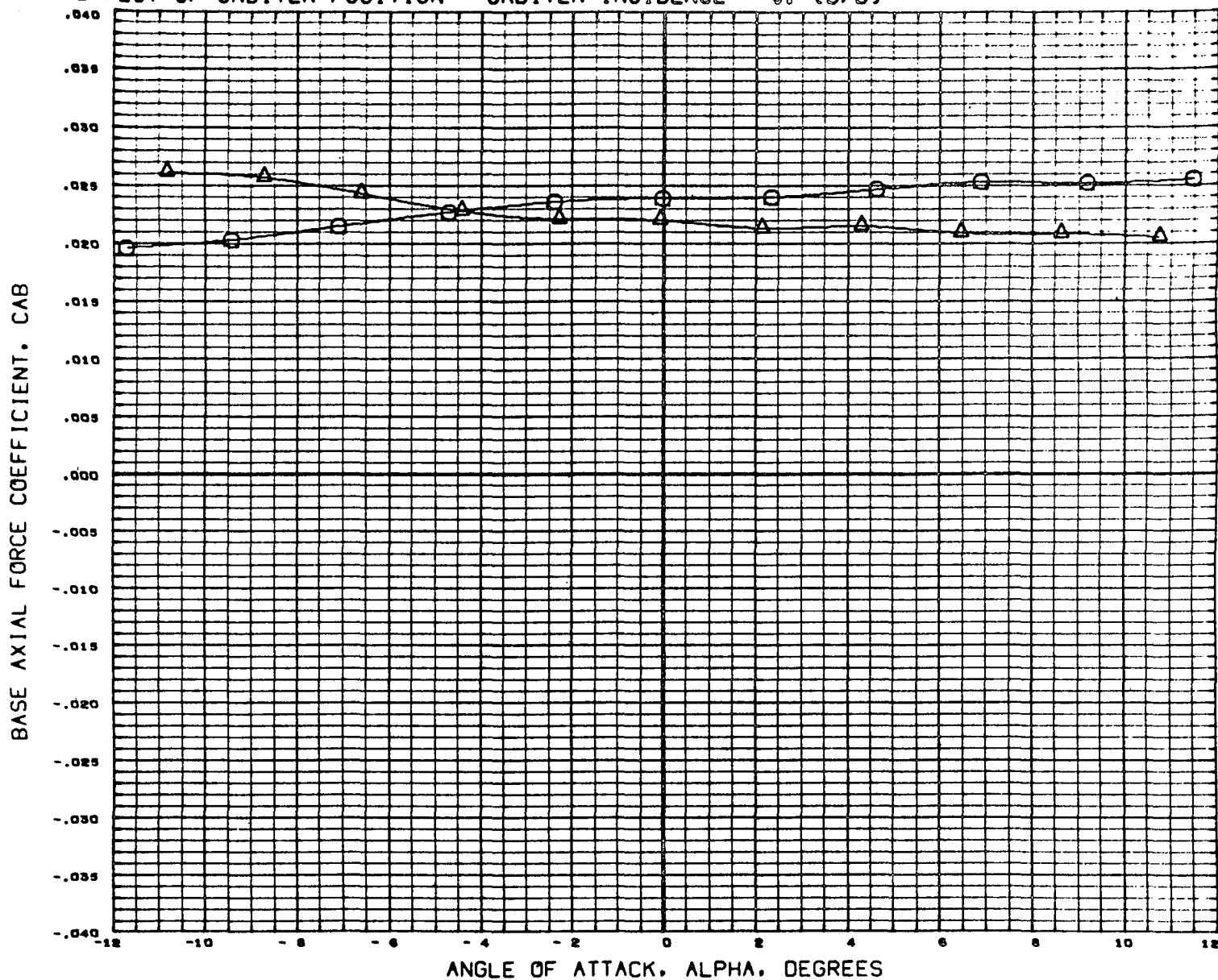


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13250A)	MSPC490 NR/GD LAUNCH 820C48W14V8+85W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(13254A)	MSPC490 NR/GD LAUNCH 820C48W14V8+85W17V17	0.000	9.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)



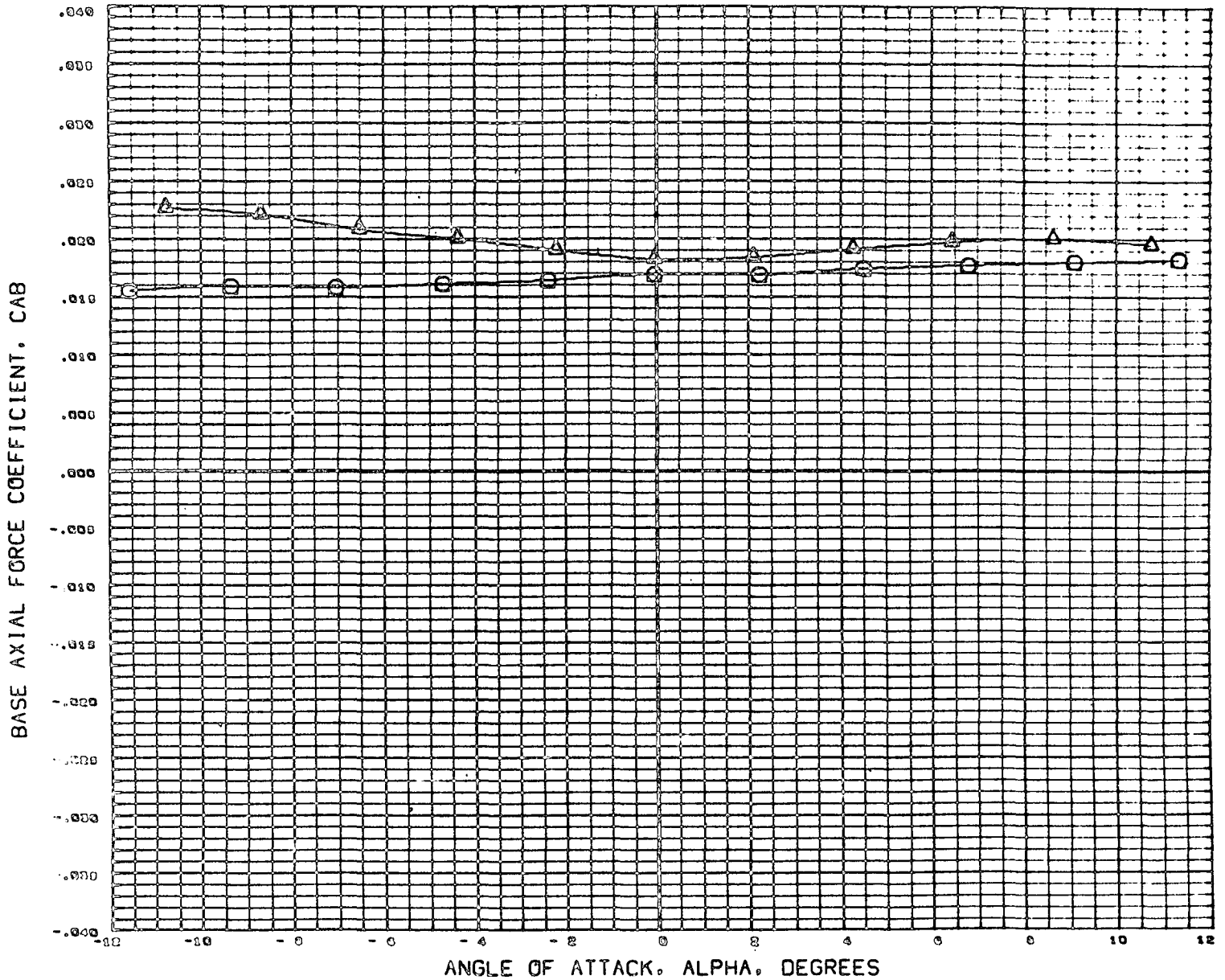
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(13254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	0.000	0.000	LREF 3.0930 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.10

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)



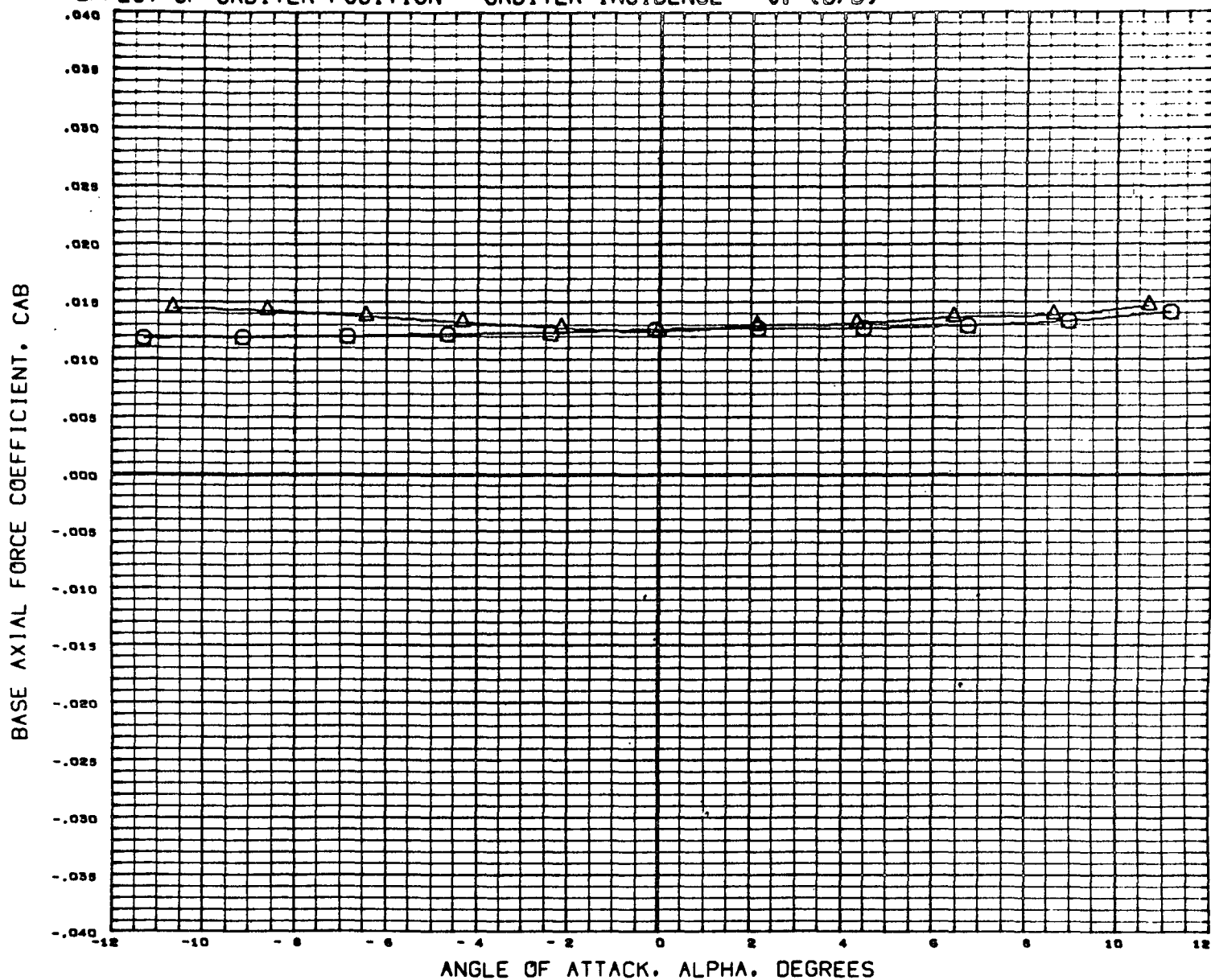
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13290A)	MSPC490 NR/GD LAUNCH B20C48W14V8+83W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(13294A)	MSPC490 NR/GD LAUNCH B20C48W14V8+83W17V17	0.000	0.000	0.000	0.000	LREF	3.0930 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0039 SCALE

MACH

1.46

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13250A) (13254A) M8PC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17
 M8PC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17

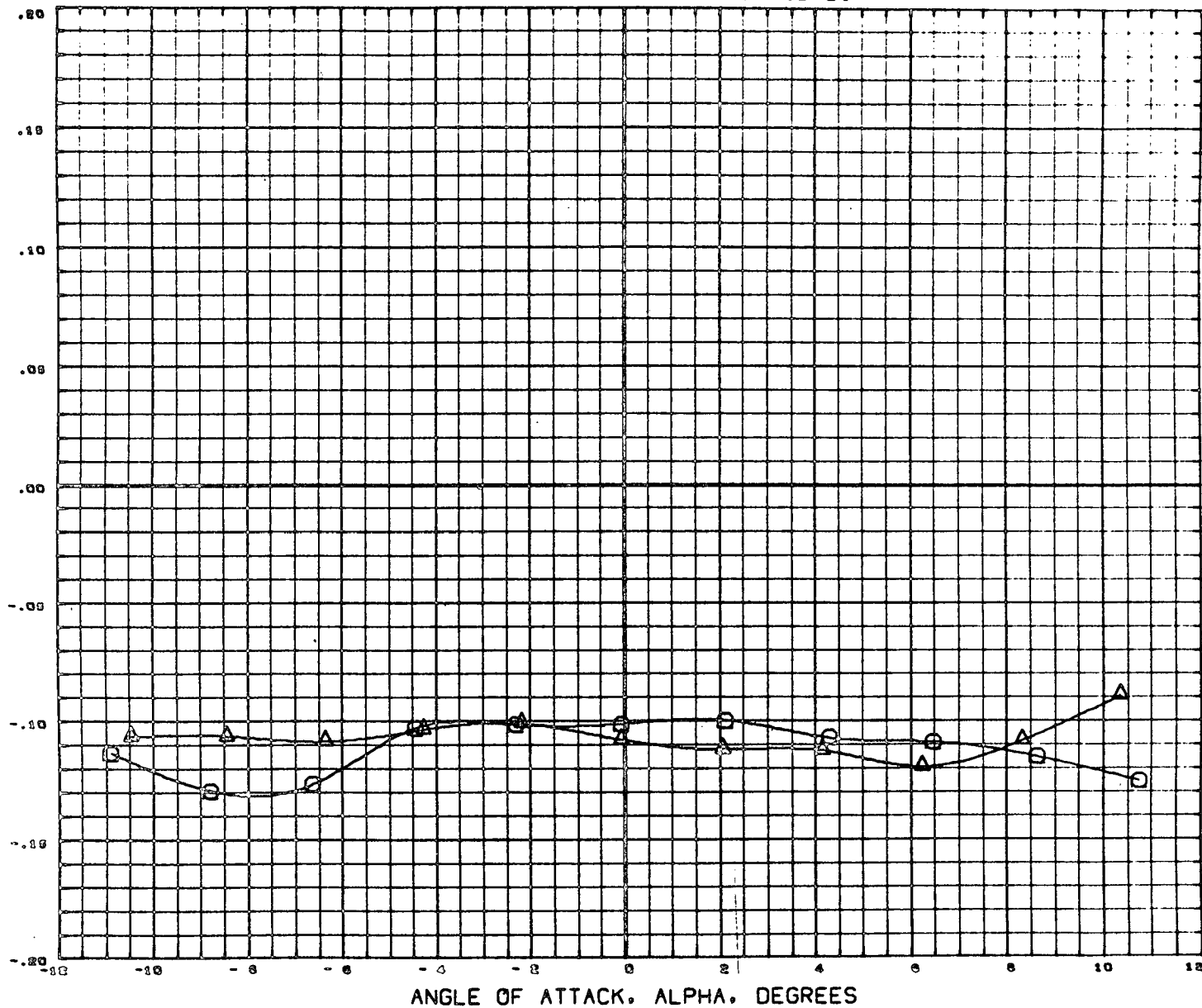
ORBITER POSITION	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	0.000	LREF 3.0950 INCHES
			BREF 6.0990 INCHES
			XMRP 0.0000
			YMRP 0.0000
			ZMRP 0.0000
			SCALE 0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(J3250A) MSFC400 NR/GD LAUNCH B20C4BW14V8+85W17V17
(J3254A) MSFC400 NR/GD LAUNCH B20C4BW14V8+85W17V17

ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	5.000	0.000	0.000

REFERENCE INFORMATION		
SREP	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

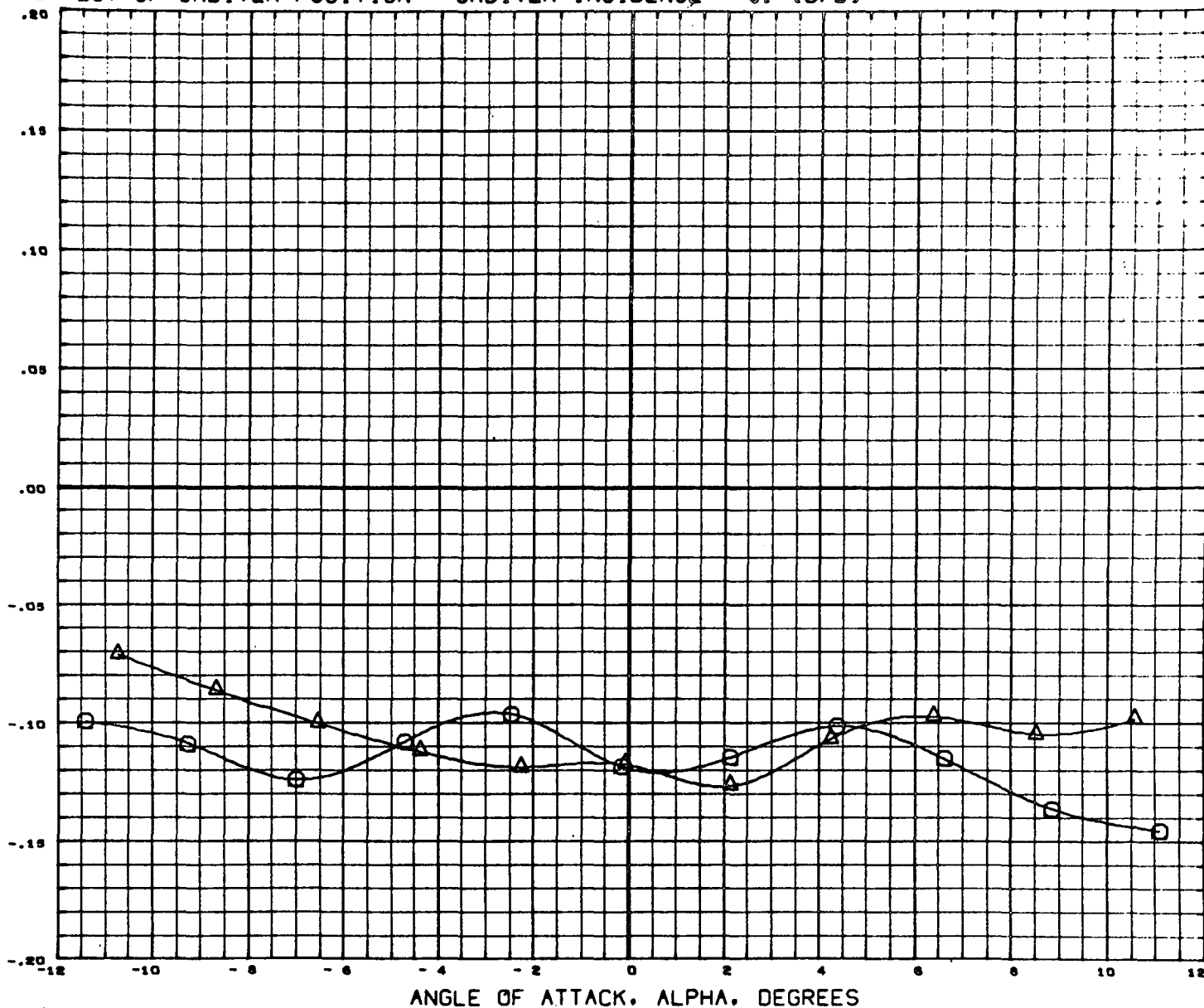
MACH

.60

PAGE 266

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3250A) ○	MSFC490 NR/GD LAUNCH B20C4BW14V8+83W17V17
(J3254A) △	MSFC490 NR/GD LAUNCH B20C4BW14V8+83W17V17

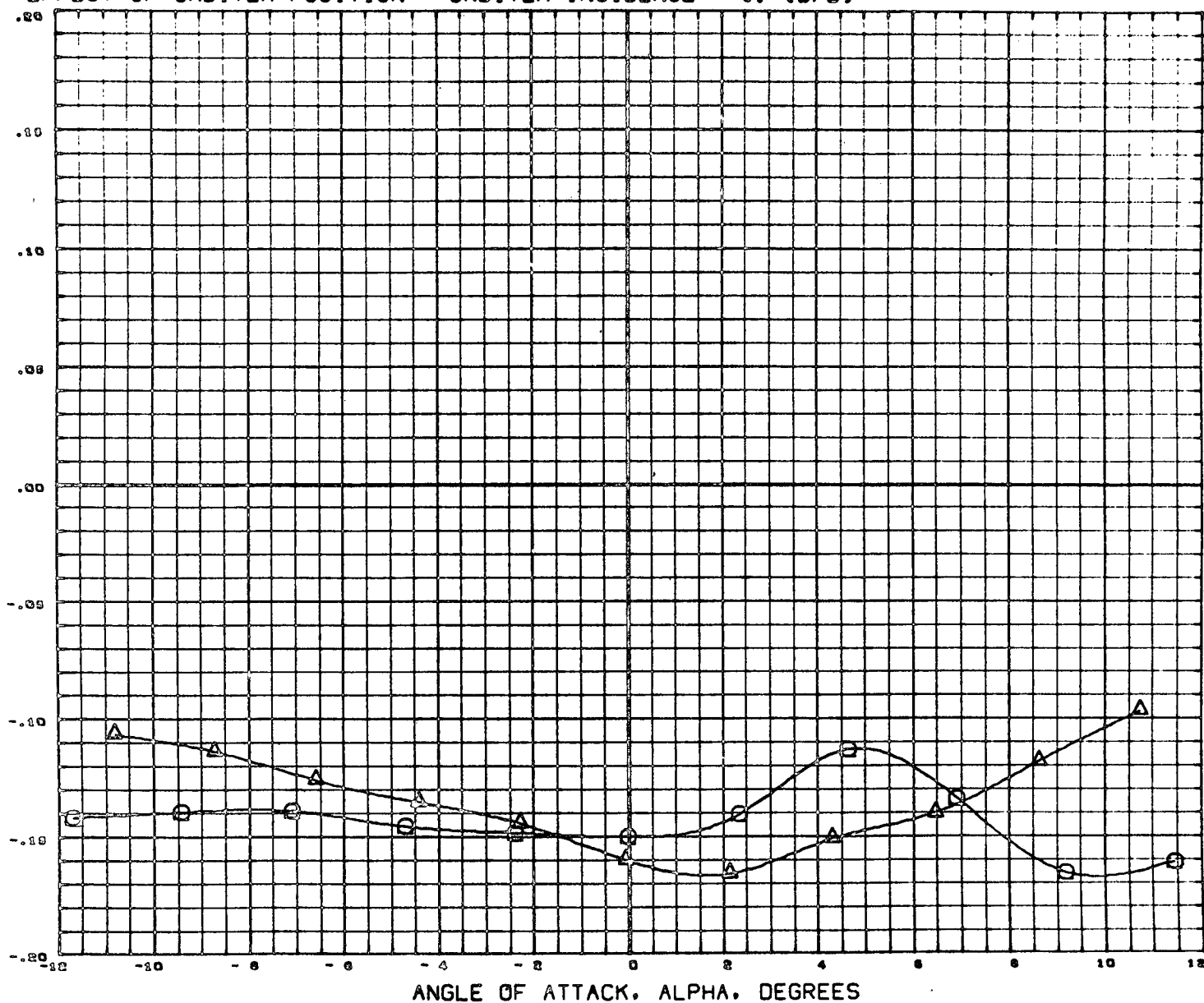
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .90

PAGE 267

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3290A)	MSPC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(J3294A)	MSPC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR
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0.000	9.000	0.000	0.000

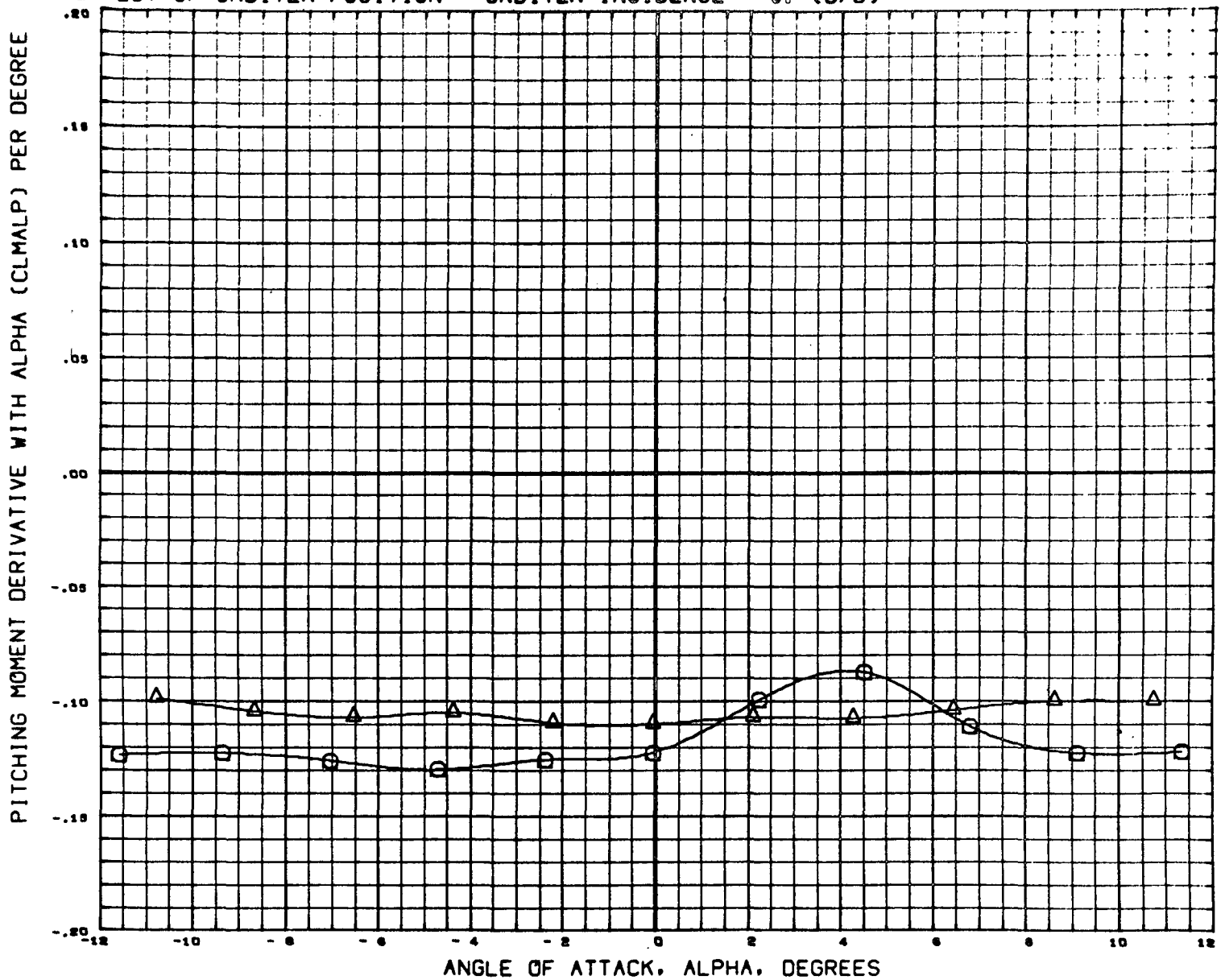
REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH

1.10

PAGE 268

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

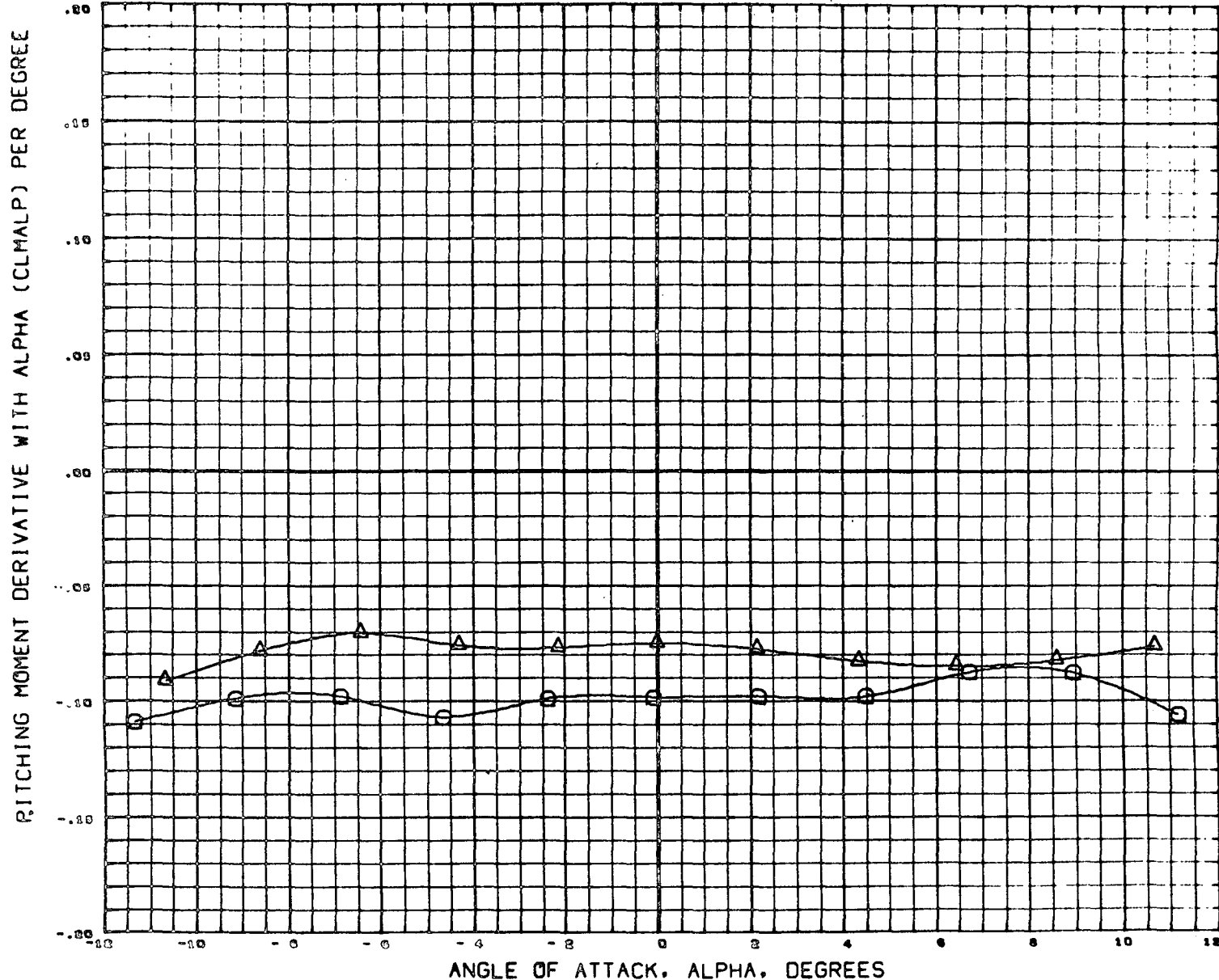


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(JS250A)	Q HSPC490 NR/GD LAUNCH B20C48W14V8+85W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(JS254A)	Δ HSPC490 NR/GD LAUNCH B20C48W14V8+85W17V17	0.000	5.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

PAGE 269

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



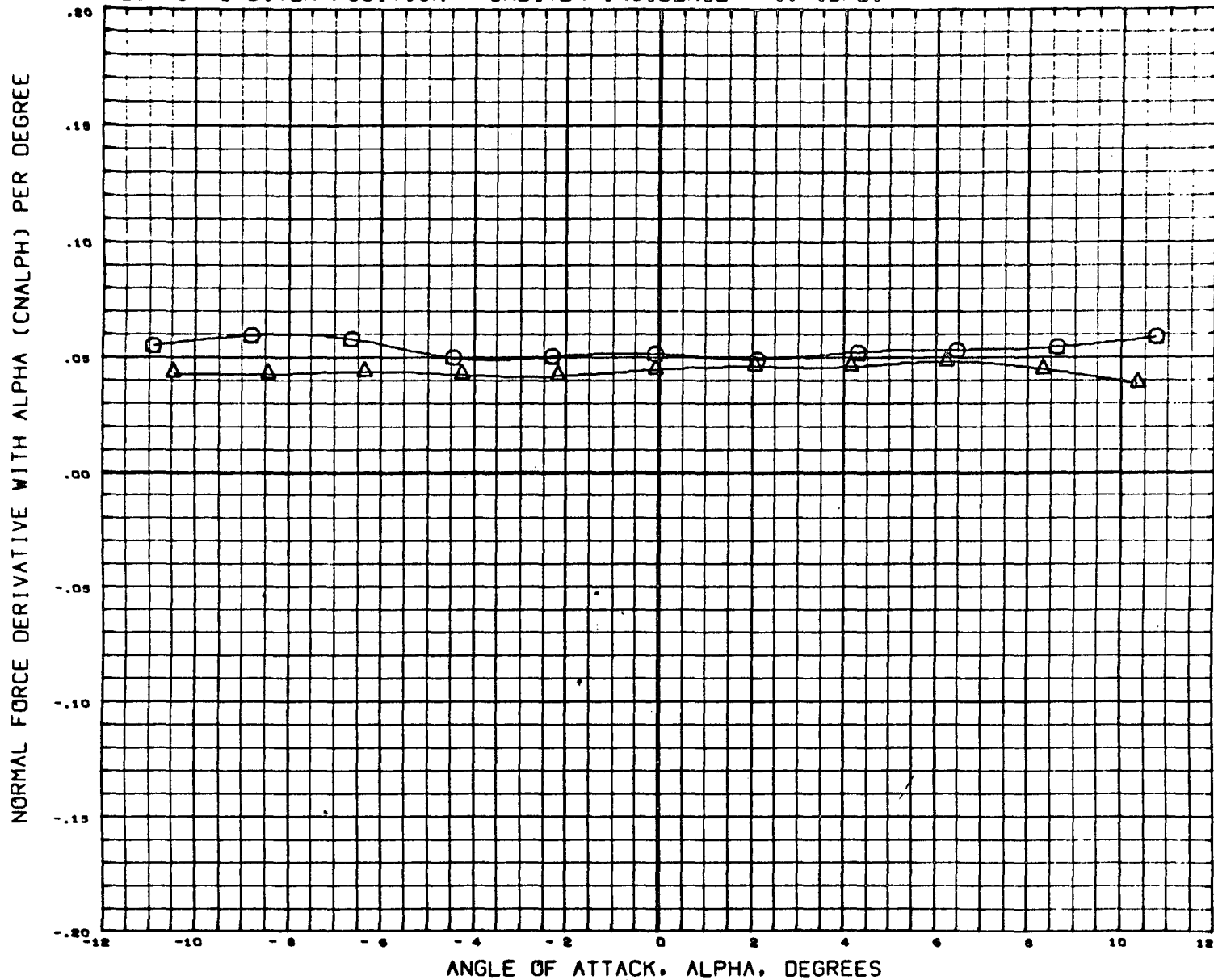
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (J3250A) M5PC400 NR/GD LAUNCH B20C4BW14V8+83W17V17
 (J3254A) M5PC400 NR/GD LAUNCH B20C4BW14V8+83W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 30 IN
0.000	9.000	0.000	0.000	LREF	3.0930 INCHES
				BREF	0.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

PAGE 270

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (8/8)



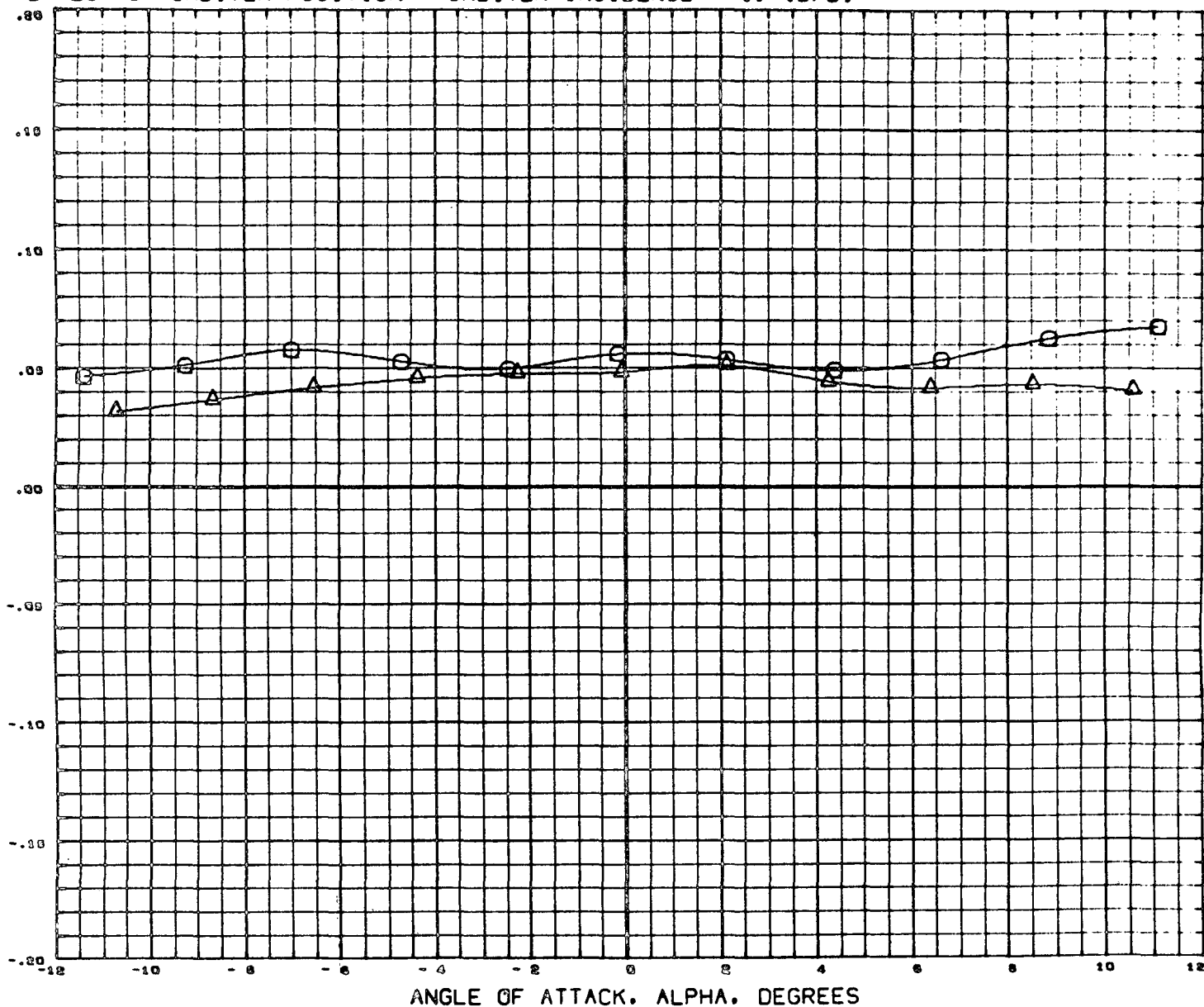
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(J3250A)	Q NSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(J3254A)	A NSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	5.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

PAGE 271

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



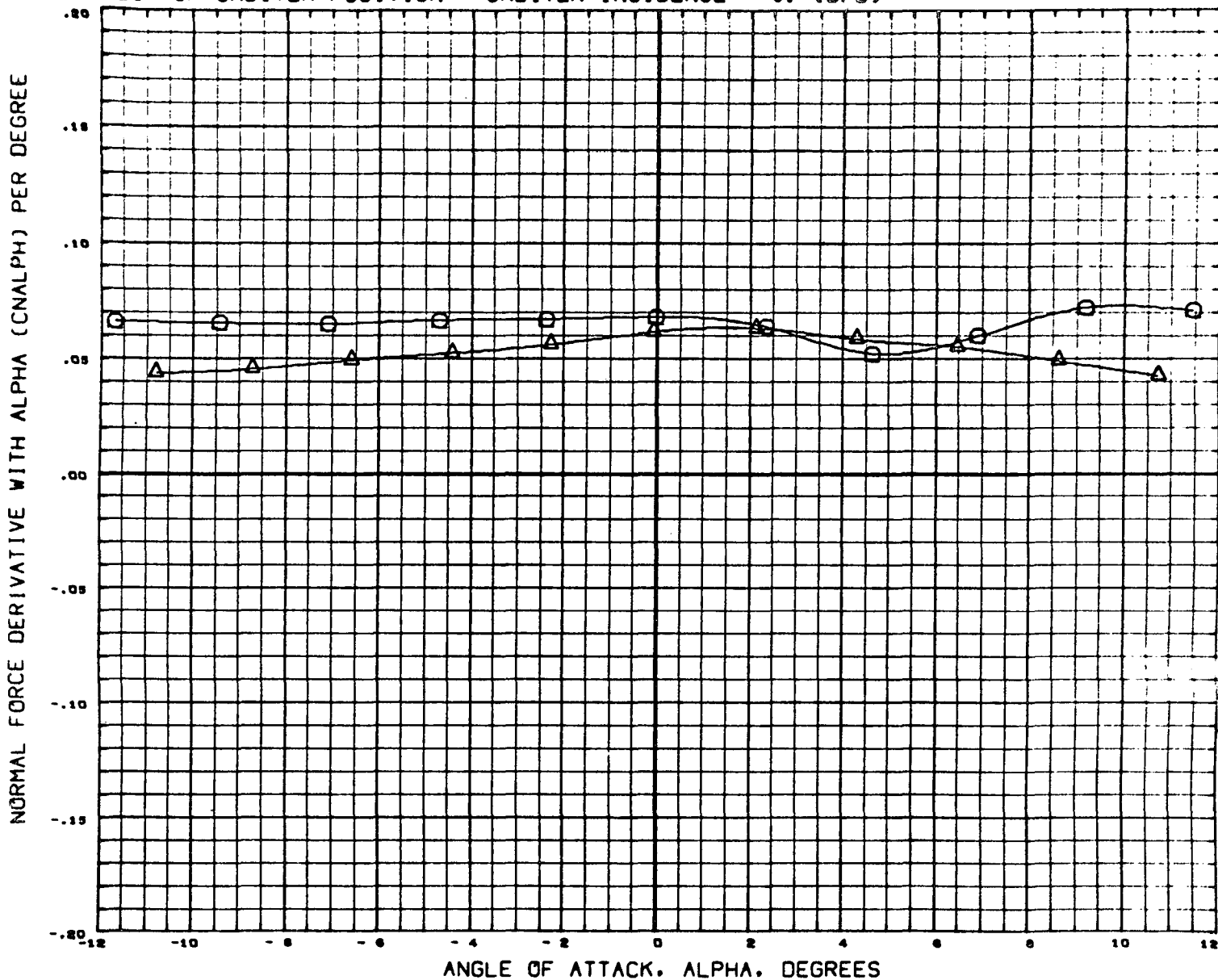
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3250A)	MSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17
(J3254A)	MSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	9.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 0.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0033 SCALE

MACH

.90

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



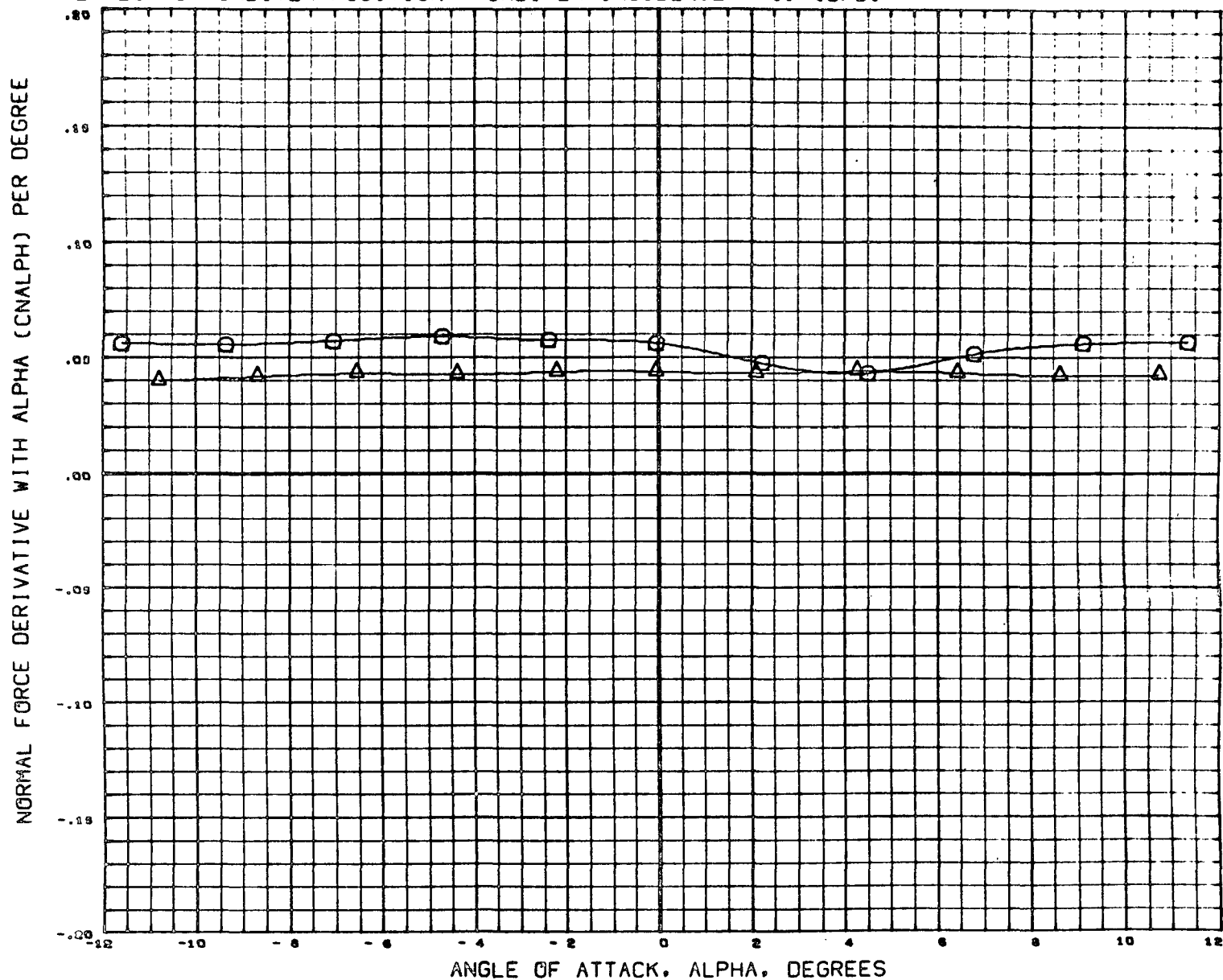
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3290A)	MSFC490 NR/GD LAUNCH 820C48W14V8+83W17V17
(J3294A)	MSFC490 NR/GD LAUNCH 820C48W14V8+83W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.10

PAGE 273

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



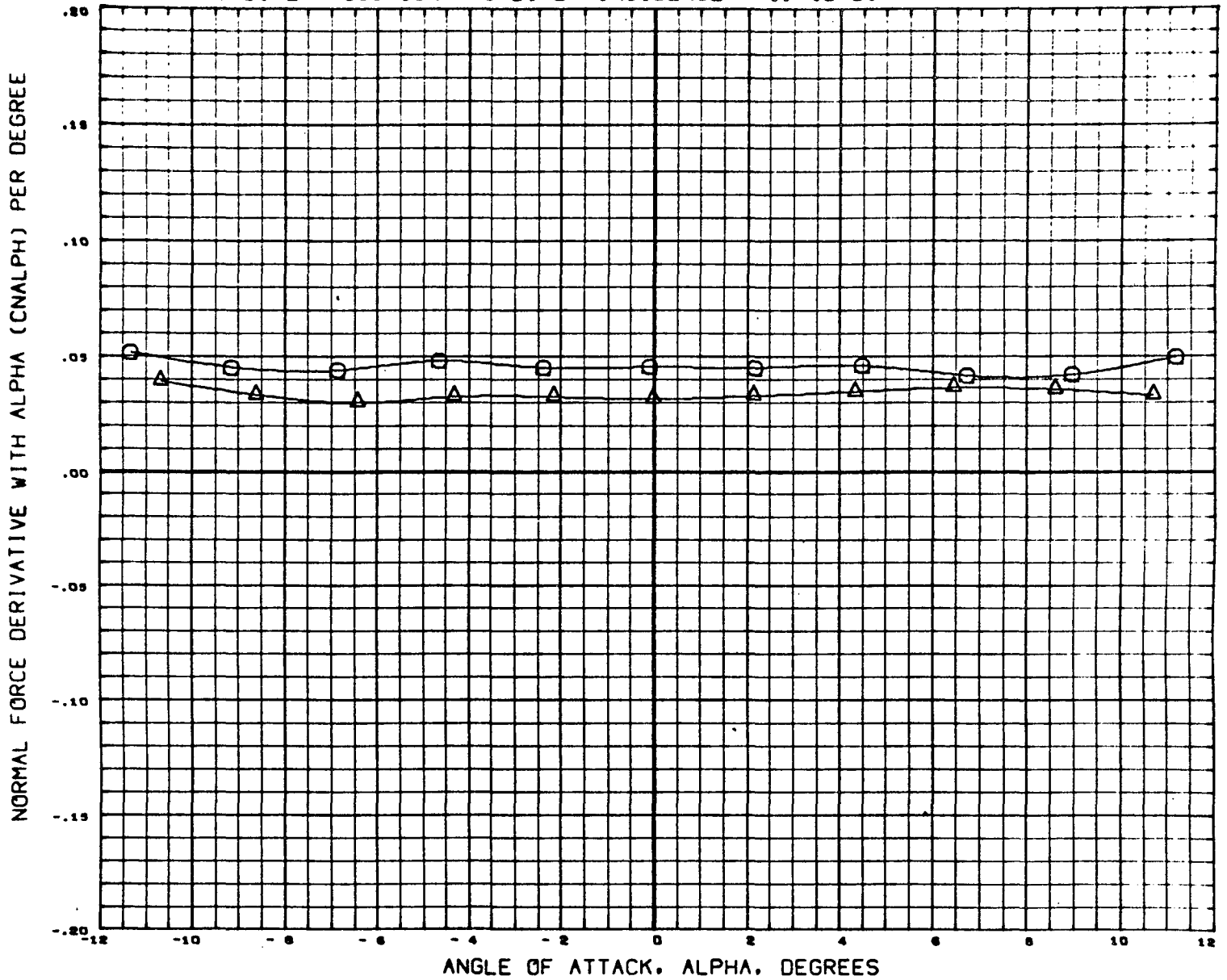
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3290A)	MSFC490 NR/GO LAUNCH 820C48W14V8+89W17V17
(J3294A)	MSFC490 NR/GO LAUNCH 820C48W14V8+85W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRF 0.0000
				YMRF 0.0000
				ZMRF 0.0000
				SCALE 0.0035 SCALE

MACH 1.46

PAGE 274

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B)



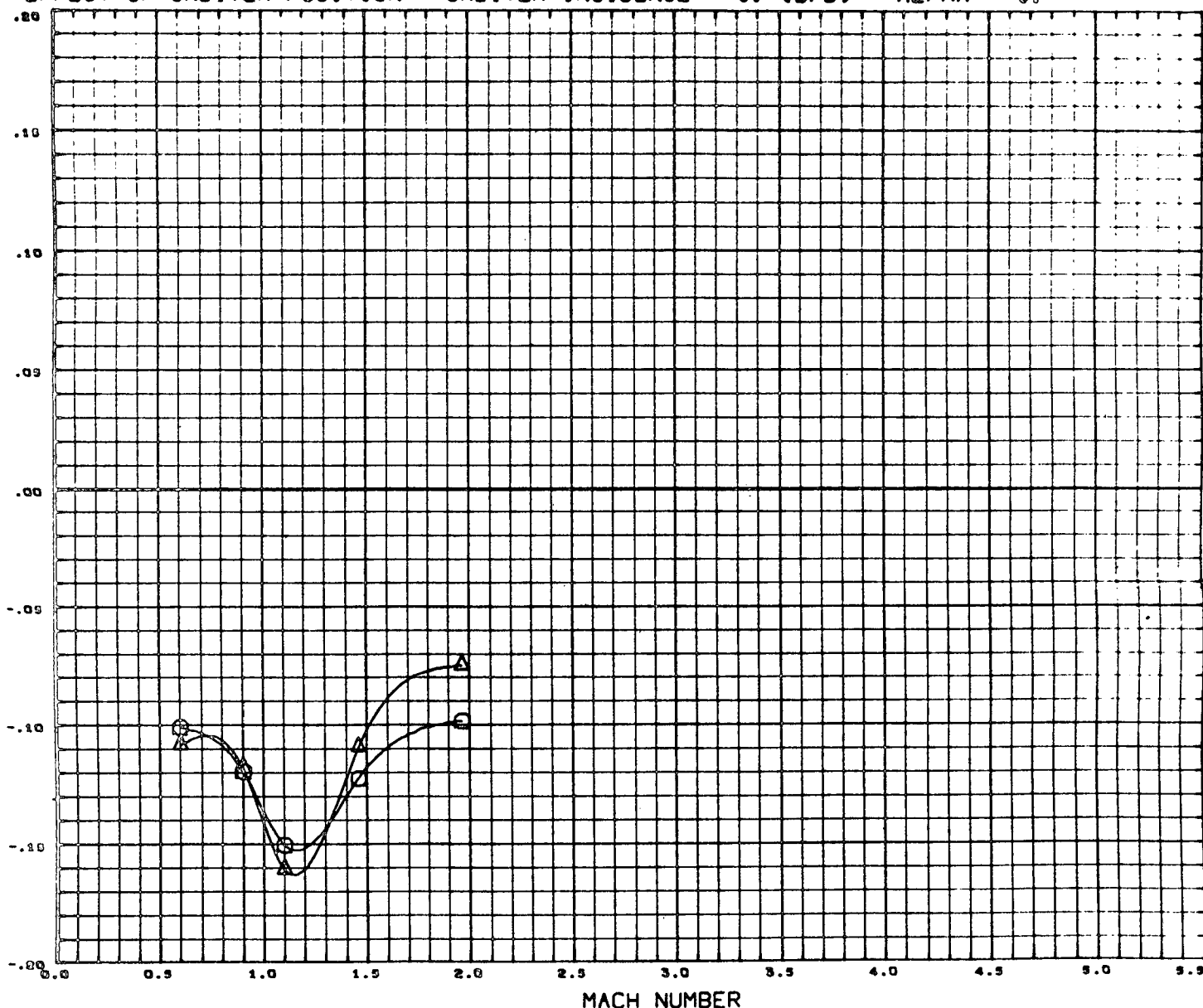
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(J3250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(J3254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	5.000	0.000	0.000	LREF	3.0990 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B) ALPHA = 0.

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K3290A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17
(J3294A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	19.6560 SQ IN
0.000	5.000	0.000	0.000	LREF	3.0930 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B) ALPHA = 0.

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



MACH NUMBER

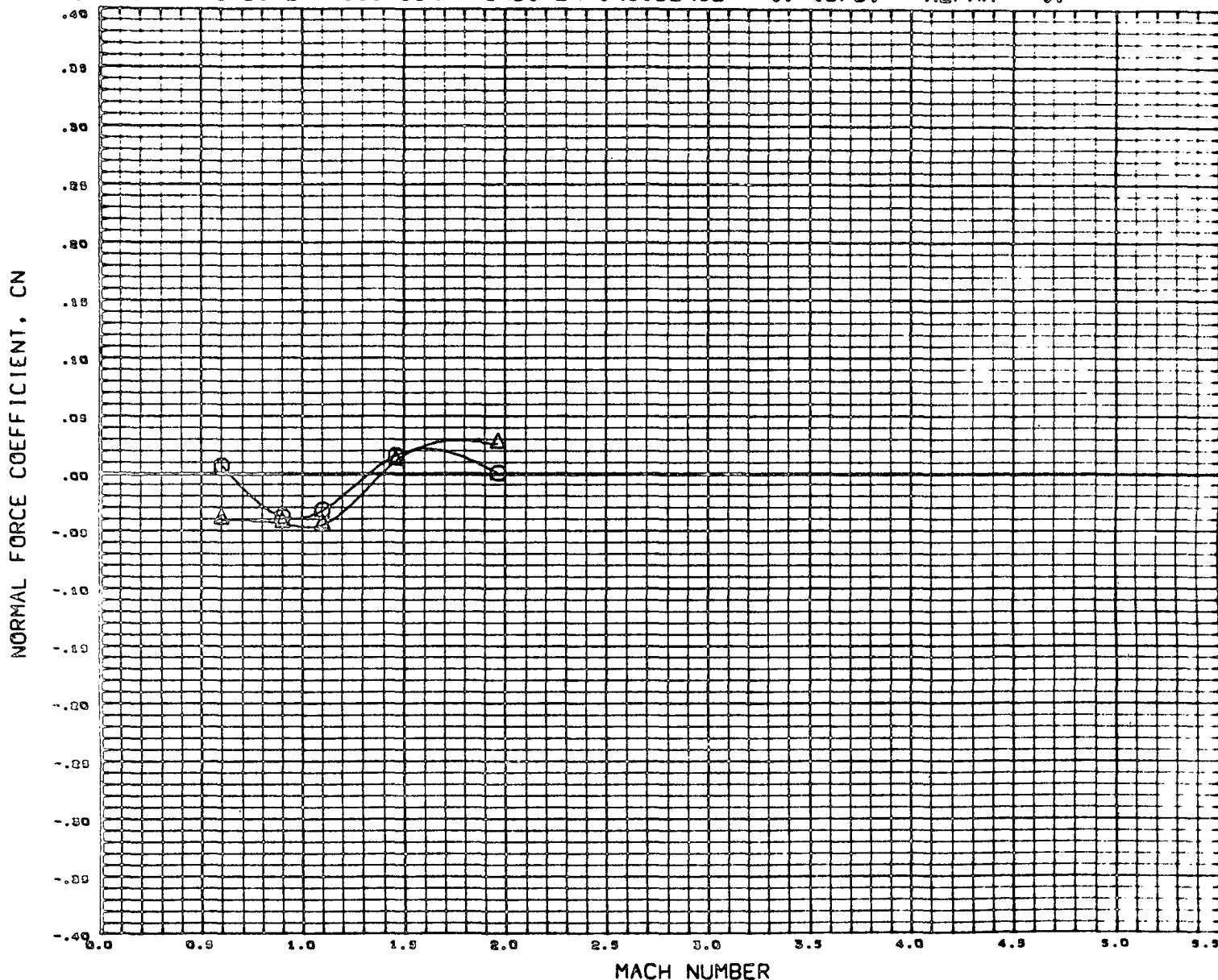
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K3230A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(J3234A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 30 IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

PAGE 277

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B) ALPHA = 0.

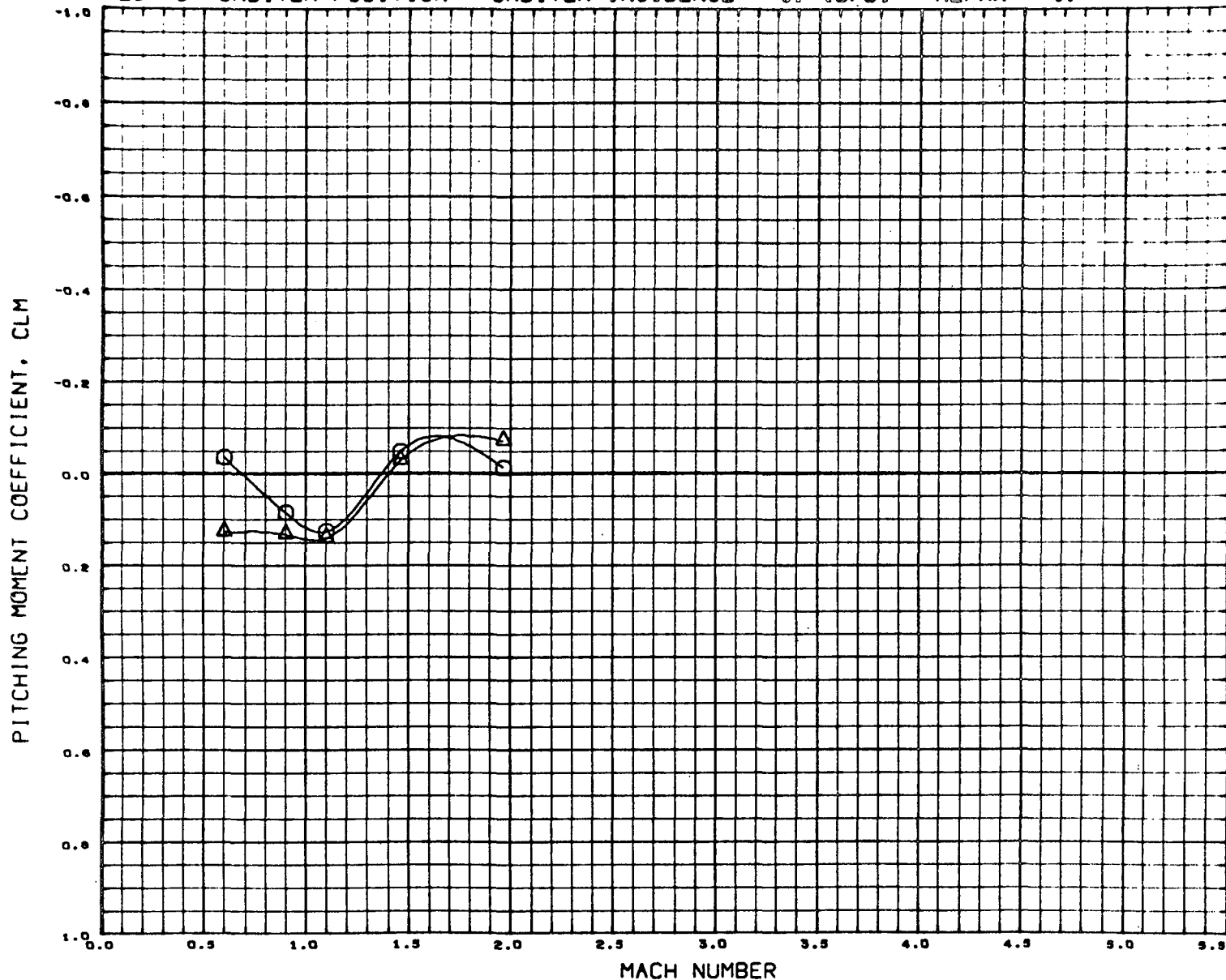


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(L3290A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(K3294A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B) ALPHA = 0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (L3250A) MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17
 (K3254A) MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

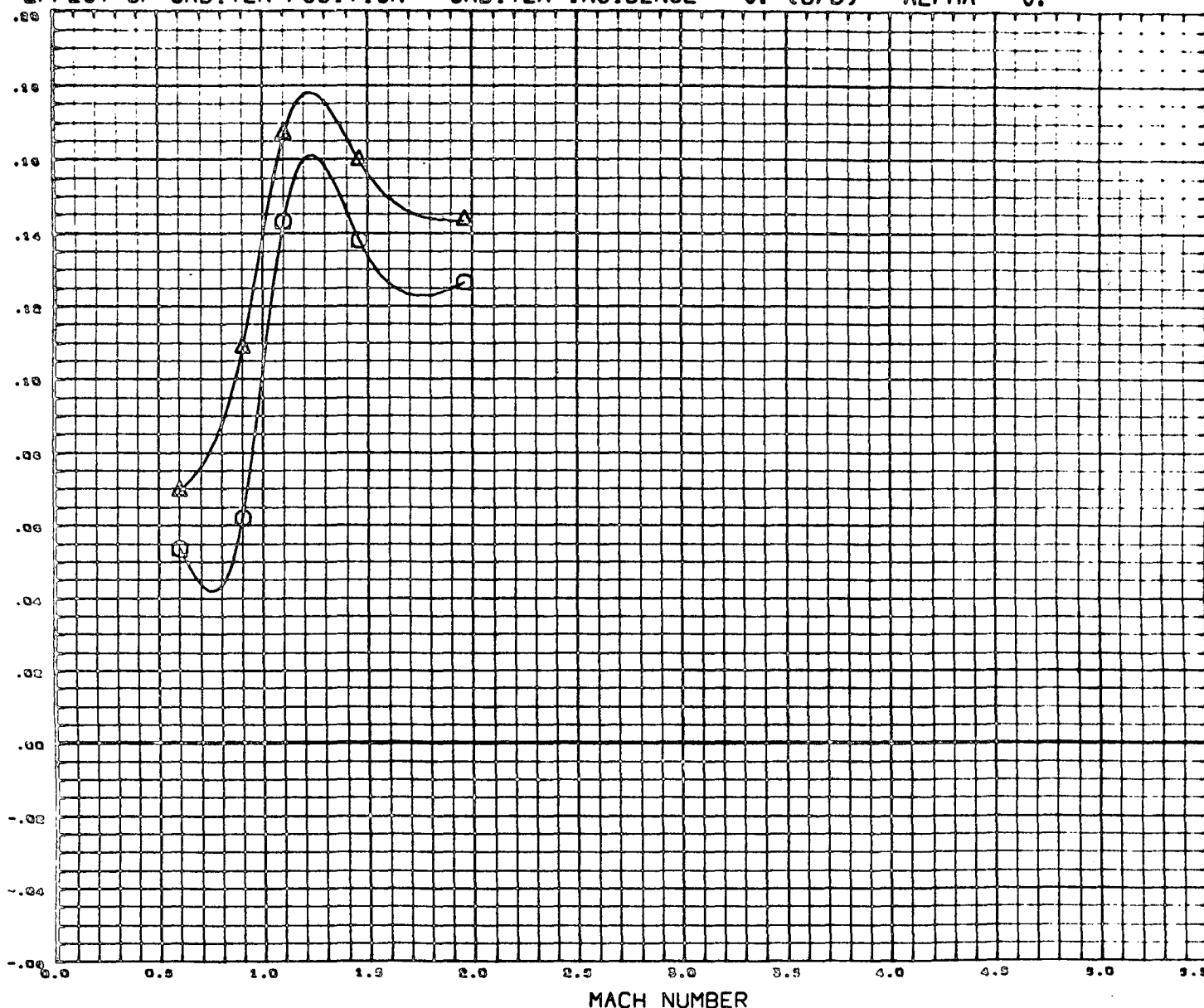
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 50 IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

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EFFECT OF ORBITER POSITION - ORBITER INCIDENCE = 0. (B/B) ALPHA = 0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(L3230A)	MSPC490 NR/GD LAUNCH 820C4BW14V8+85W17V17
(K3234A)	MSPC490 NR/GD LAUNCH 820C4BW14V8+85W17V17

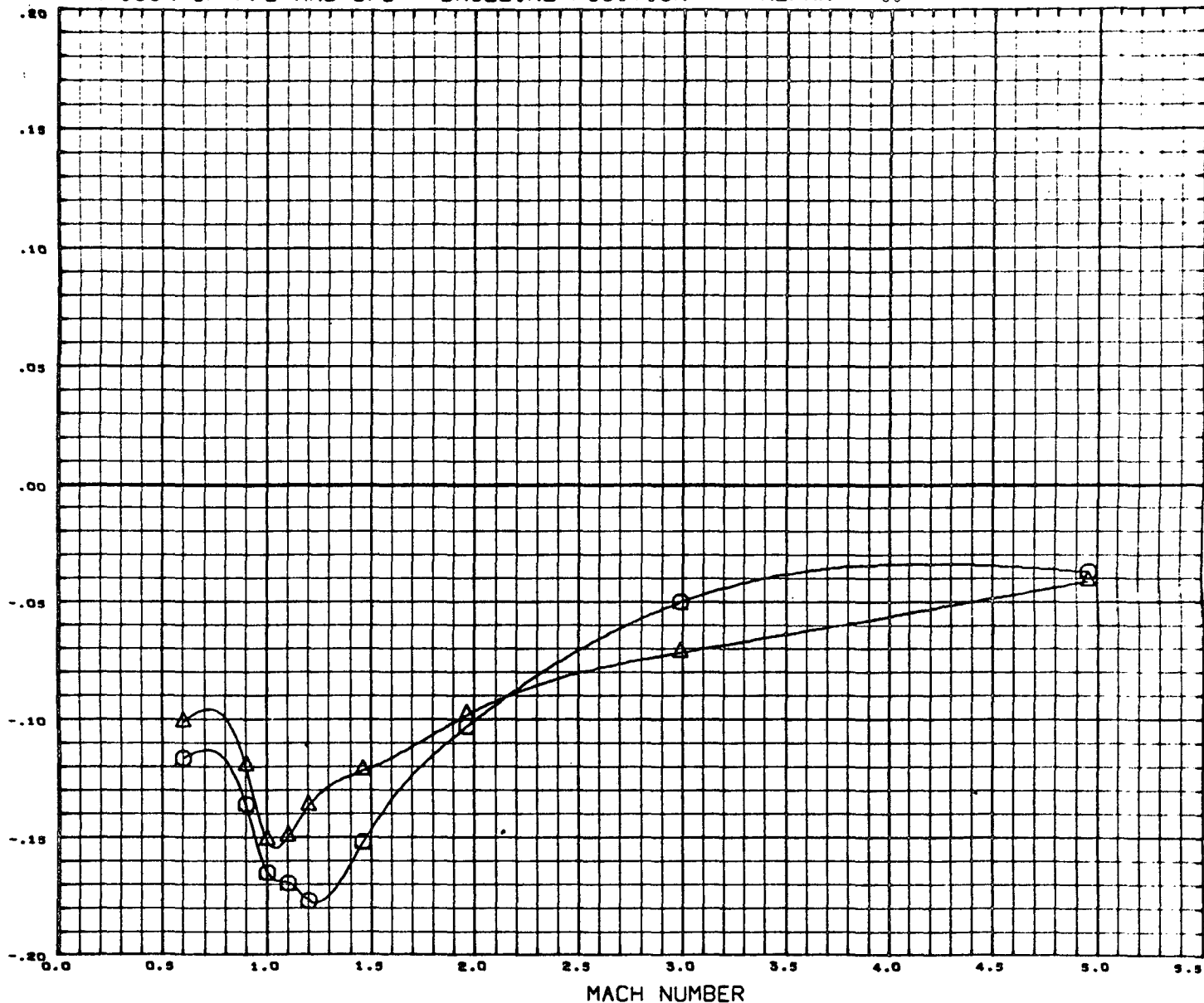
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	9.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0950 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

COMPARISON OF P/B AND B/B - BASELINE POSITION

ALPHA = 0.

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(73222A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(N3250A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	1.000	0.000	0.000	SREF 15.6560 50 IN
0.000	4.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

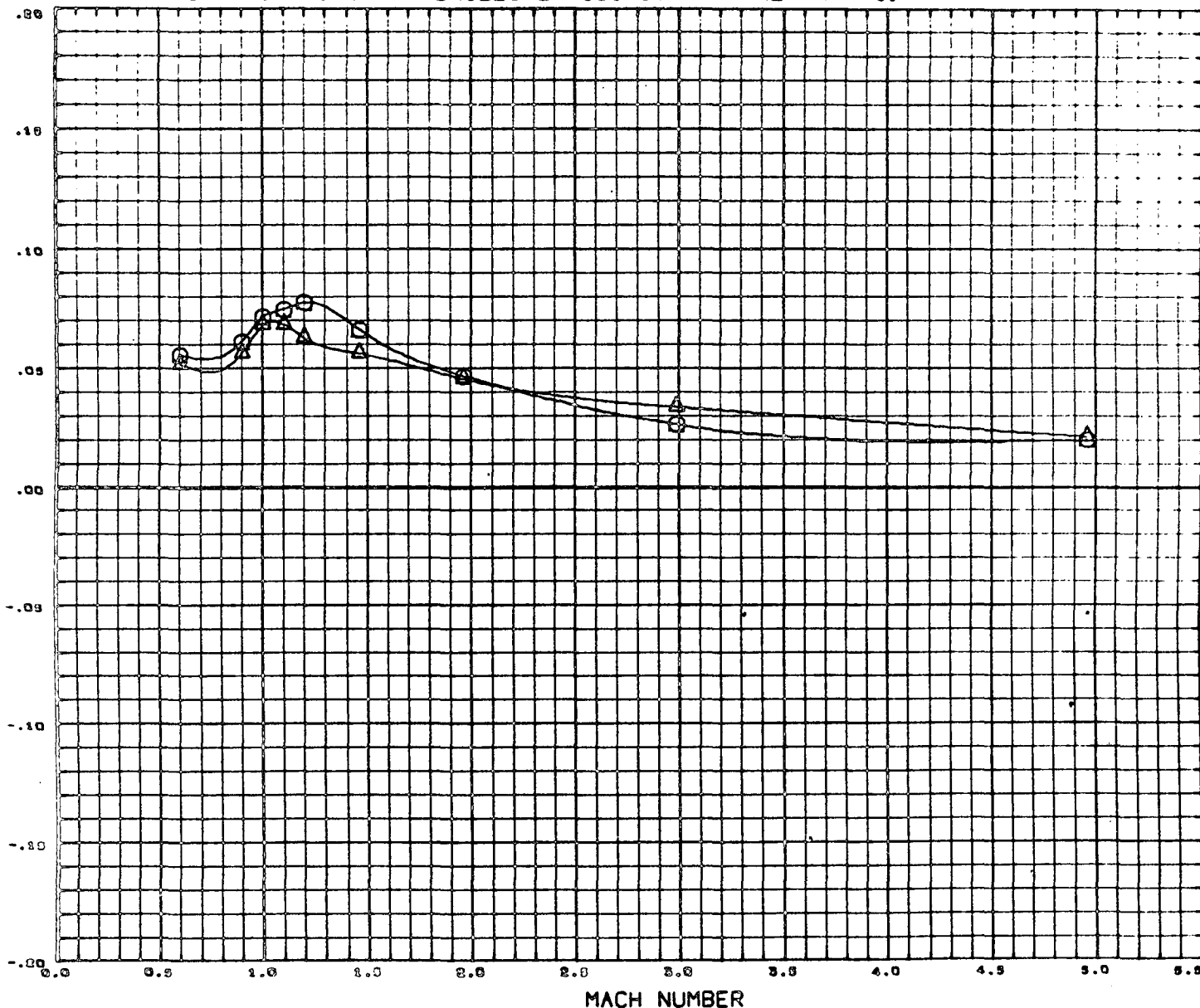
ALPHA .00

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COMPARISON OF P/B AND B/B - BASELINE POSITION

ALPHA = 0.

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



MACH NUMBER

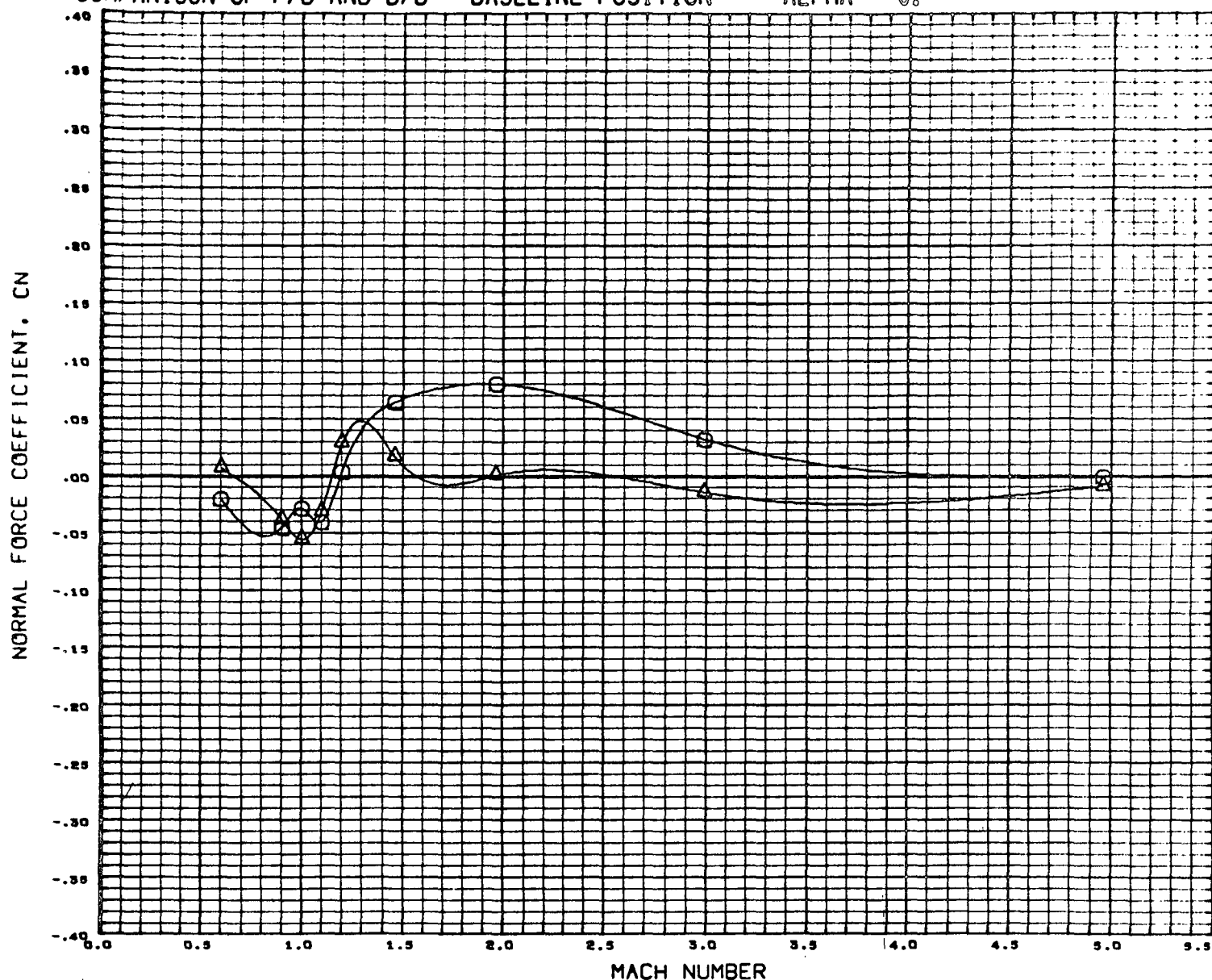
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (173222A) NSPC490 NR/GD LAUNCH B20C48W14V8+B5W17V17
 (N3290A) NSPC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	1.000	0.000	0.000	SREF	15.6560 50 IN
0.000	4.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

COMPARISON OF P/B AND B/B - BASELINE POSITION

ALPHA = 0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (83222A) O MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (U3250A) Δ MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

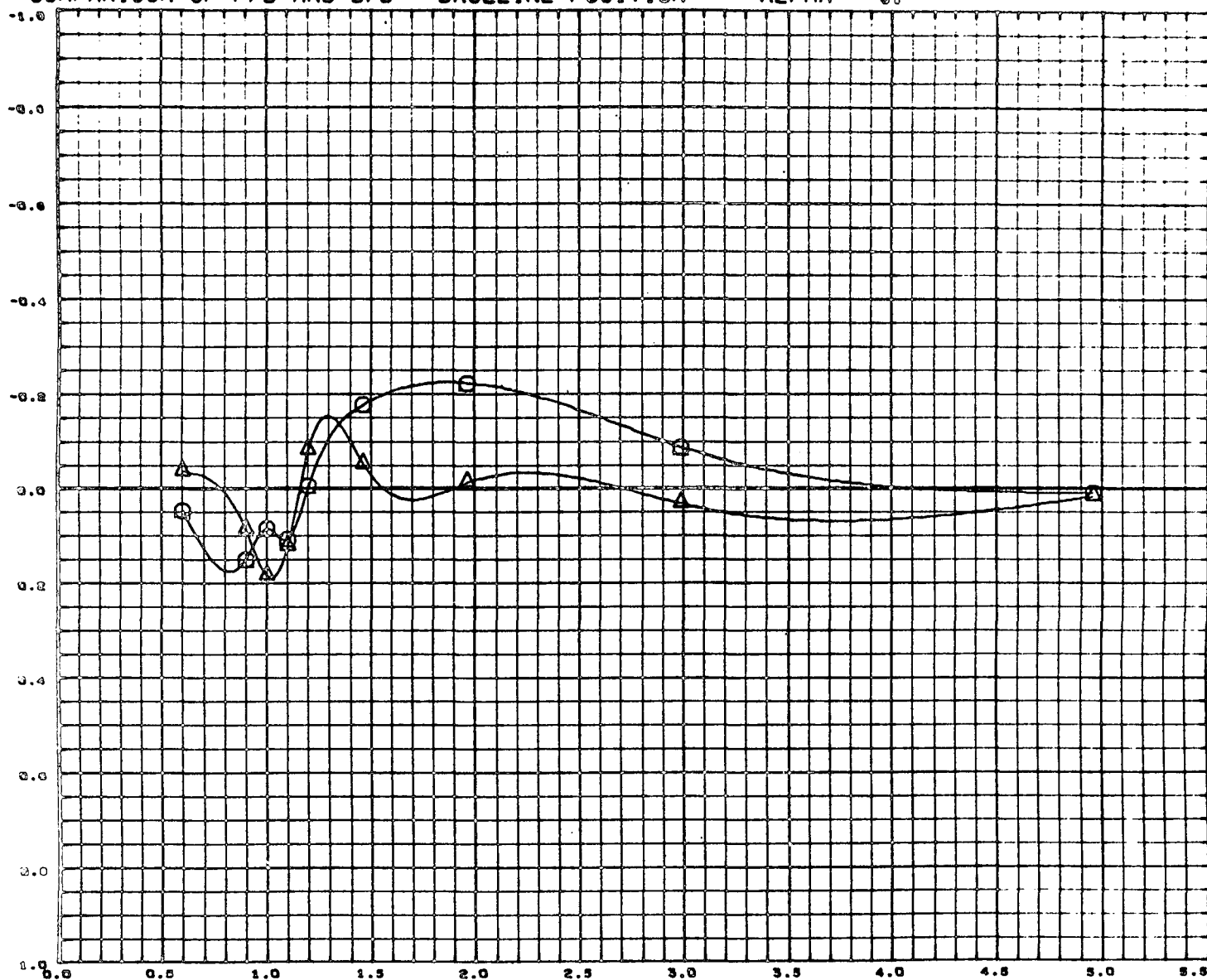
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	1.000	0.000	0.000	SREF	15.8960 SQ IN
0.000	4.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

COMPARISON OF P/B AND B/B - BASELINE POSITION

ALPHA = 0.

PITCHING MOMENT COEFFICIENT, CLM



MACH NUMBER

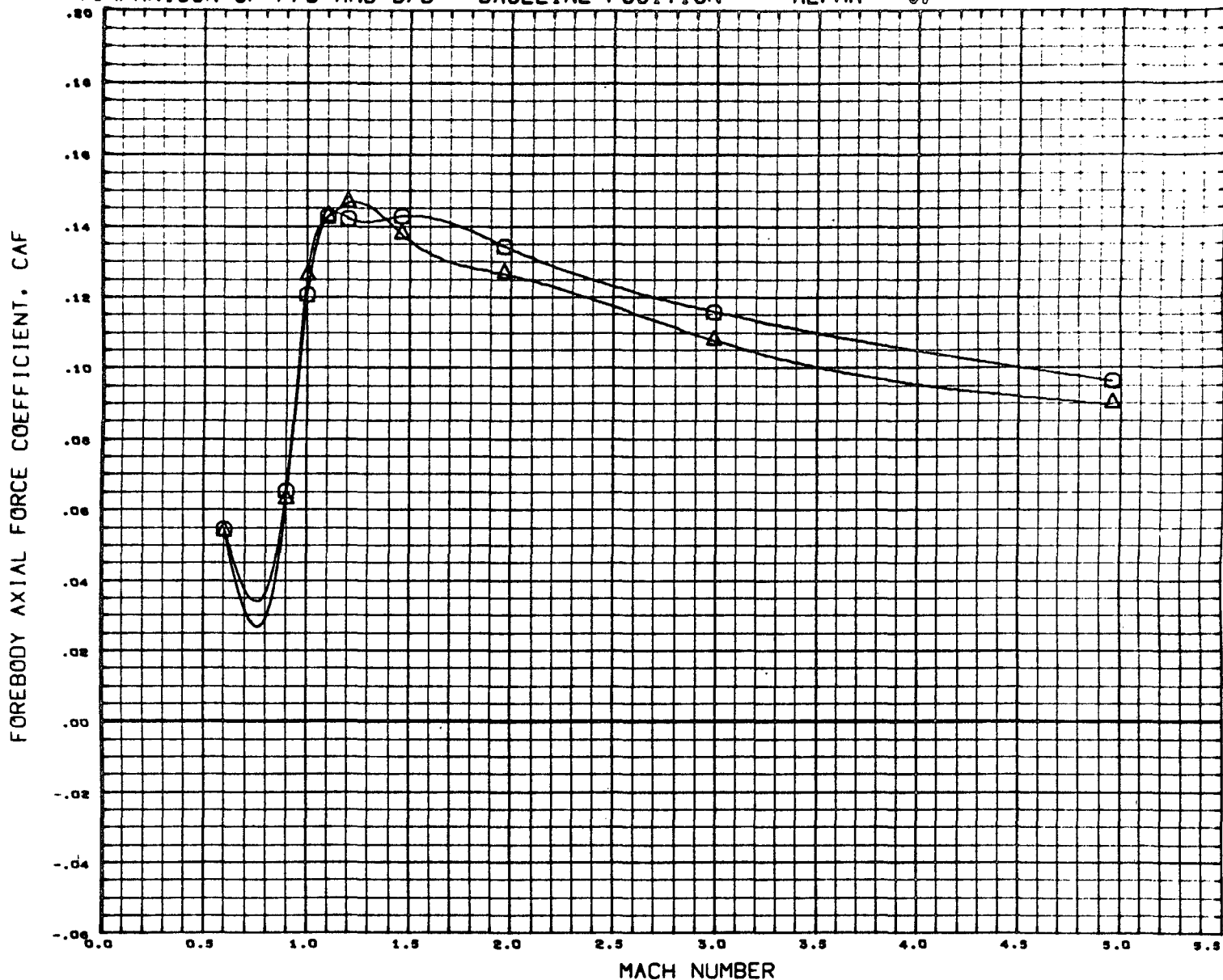
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(03222A)	HSPC490 NR/GD LAUNCH B20C48W14V8+B3W17V17
(03250A)	HSPC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

ORGINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	1.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	4.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

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COMPARISON OF P/B AND B/B - BASELINE POSITION ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(83222A)	MSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17
(U3290A)	MSFC490 NR/GD LAUNCH B20C48W14V6+B5W17V17

ORBIT	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	1.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	4.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

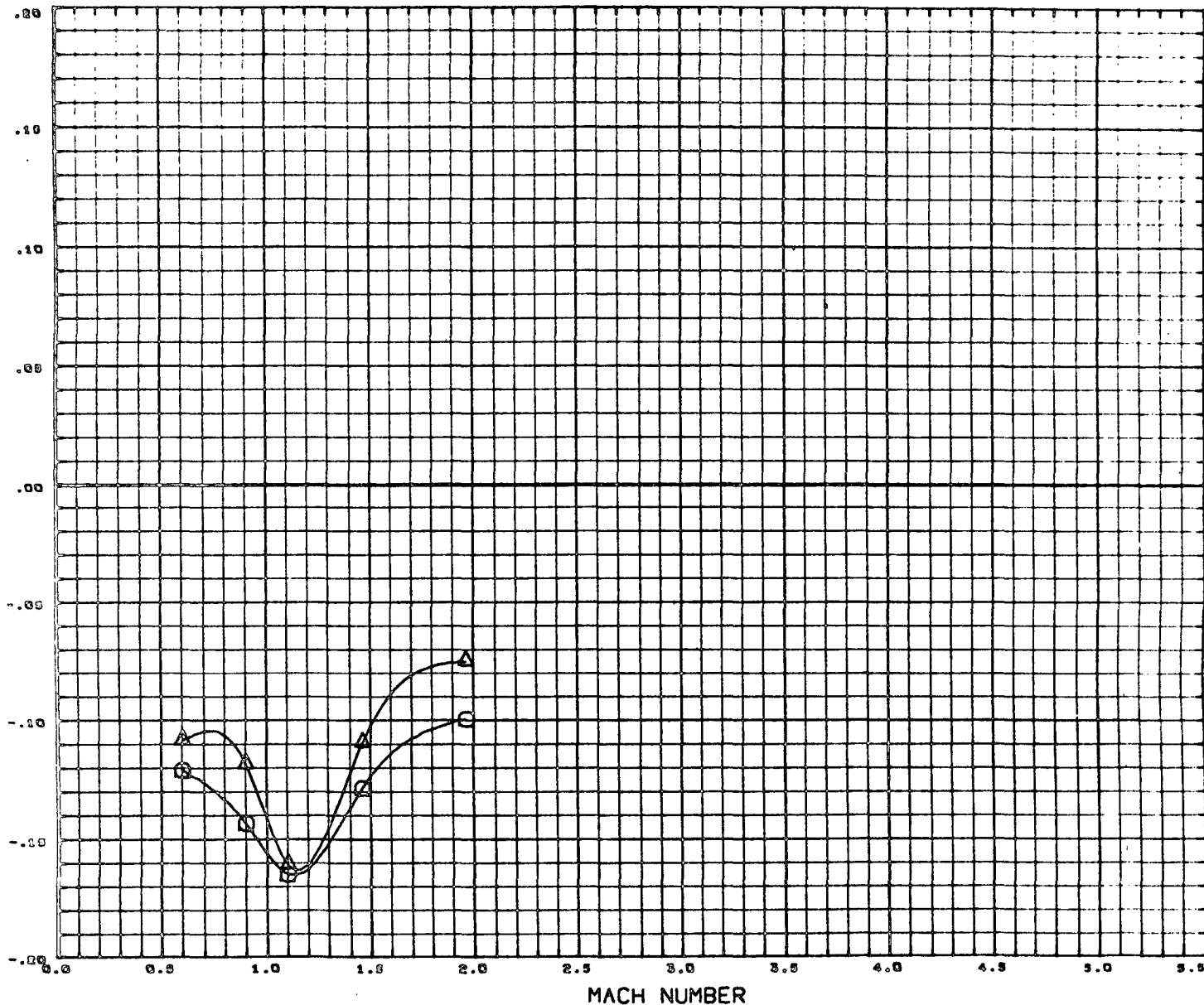
ALPHA .00

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COMPARISON OF P/B AND B/B - AFT POSITION

ALPHA = 0.

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3241A)	H3FC490 NR/GD LAUNCH B20148W14V8+B35W17V17
(H3254A)	H3FC490 NR/GD LAUNCH B20C48W14V8+B35W17V17

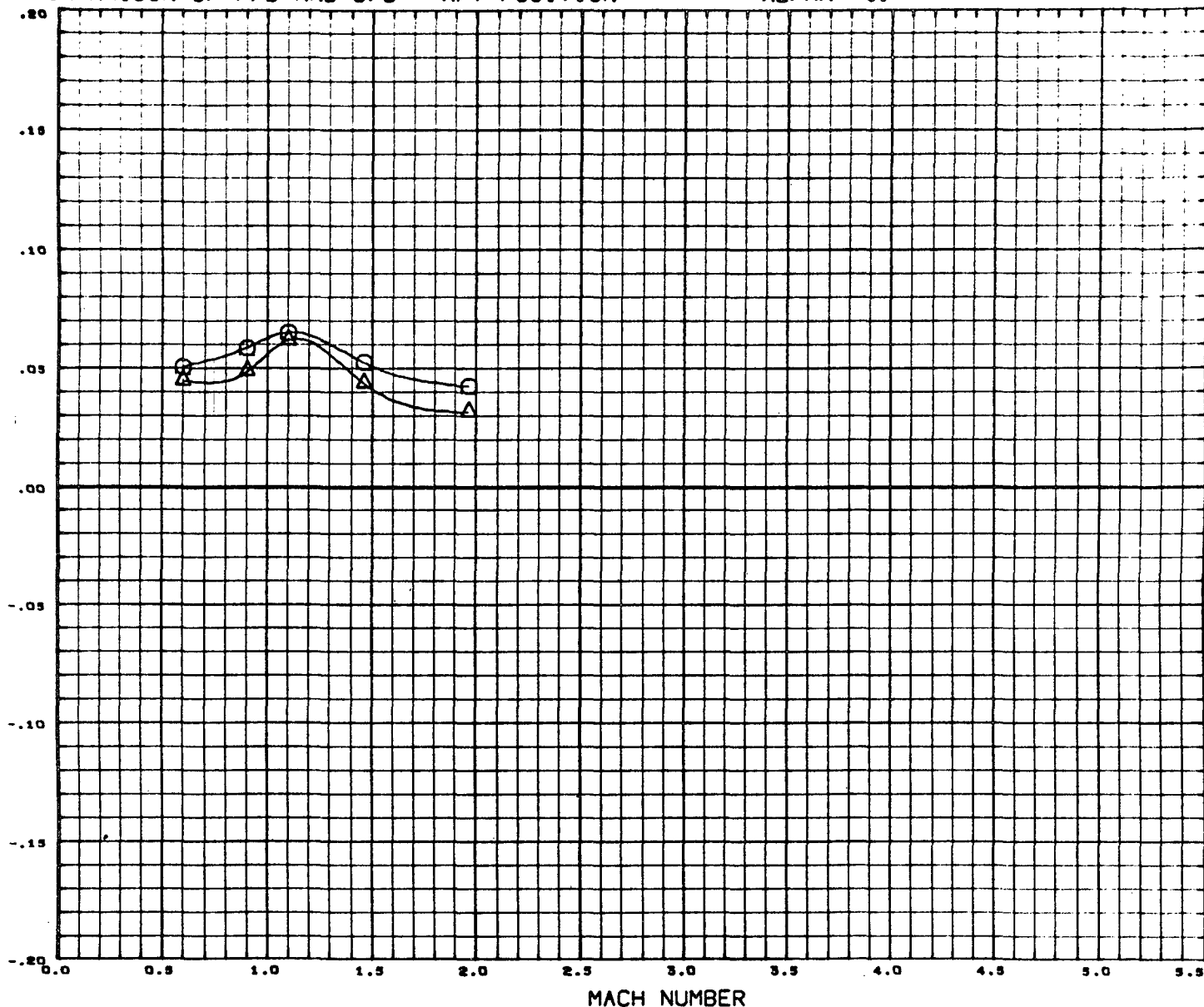
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	3.000	0.000	0.000	SREF	15.6560 80 IN
0.000	3.000	0.000	0.000	LREF	3.0980 INCHES
				BREF	3.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

COMPARISON OF P/B AND B/B - AFT POSITION

ALPHA = 0.

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(M3241A)	M3FC490 NR/GD LAUNCH B20148W14V8+B5W17V17
(M3254A)	M3FC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

MACH NUMBER

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	3.000	0.000	0.000	SREF 15.6560 30 IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0950 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

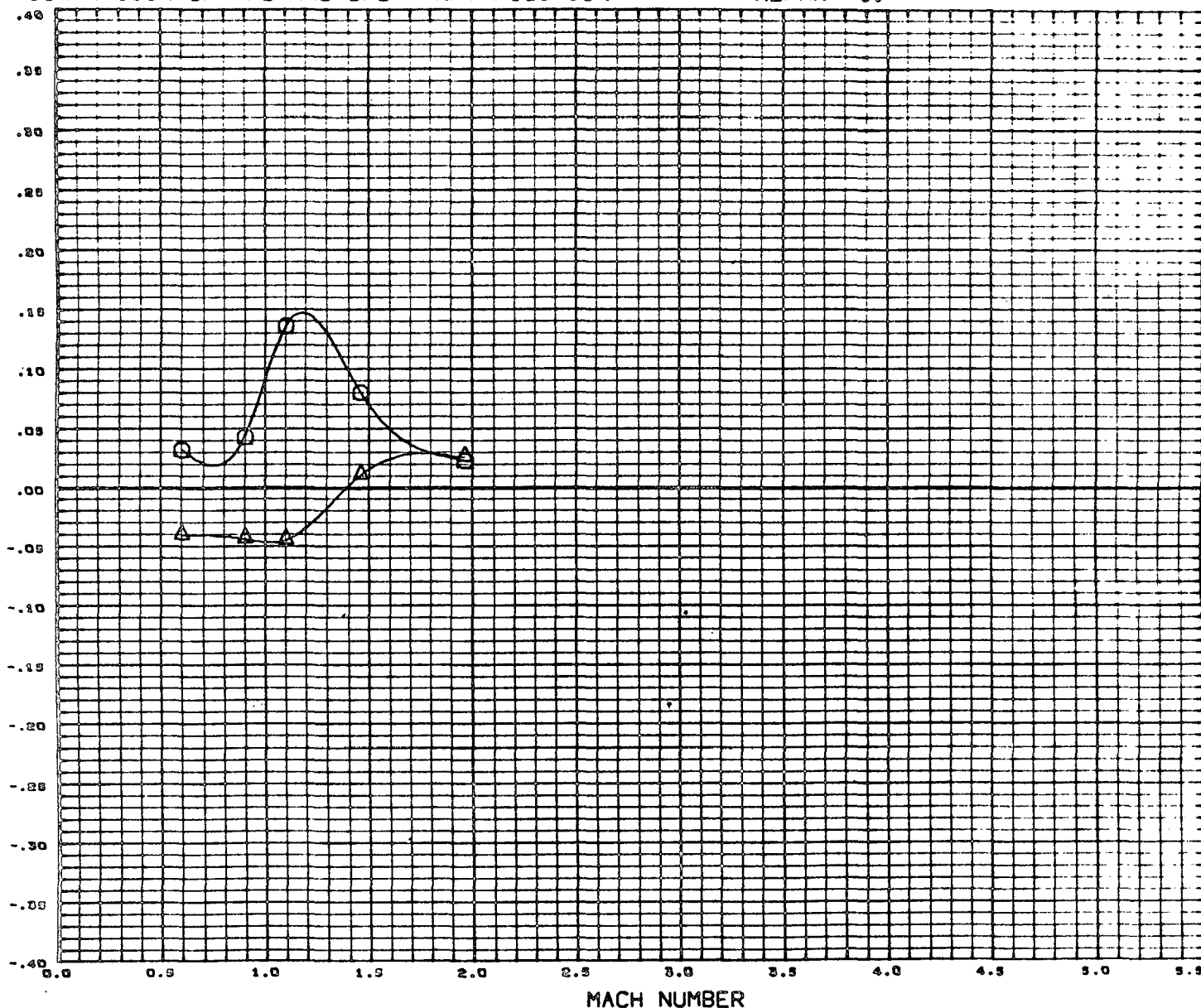
ALPHA .00

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COMPARISON OF P/B AND B/B - AFT POSITION

ALPHA = 0.

NORMAL FORCE COEFFICIENT, CN



MACH NUMBER

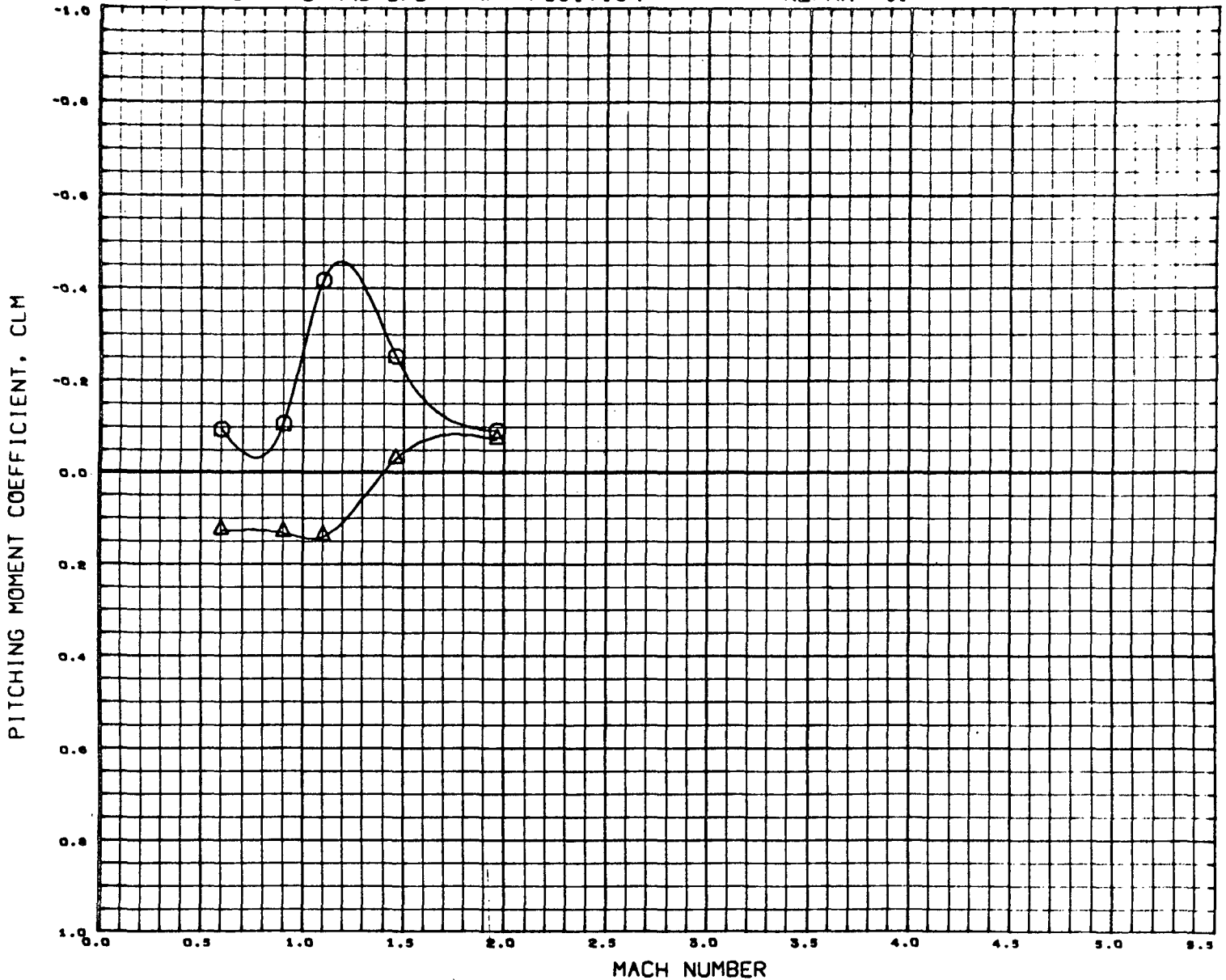
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(L3241A)	MSFC490 NR/GD LAUNCH B2014BW14V6+B5W17V17
(L3254A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17



ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	3.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

COMPARISON OF P/B AND B/B - AFT POSITION

ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(L3241A) 	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17
(L3254A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

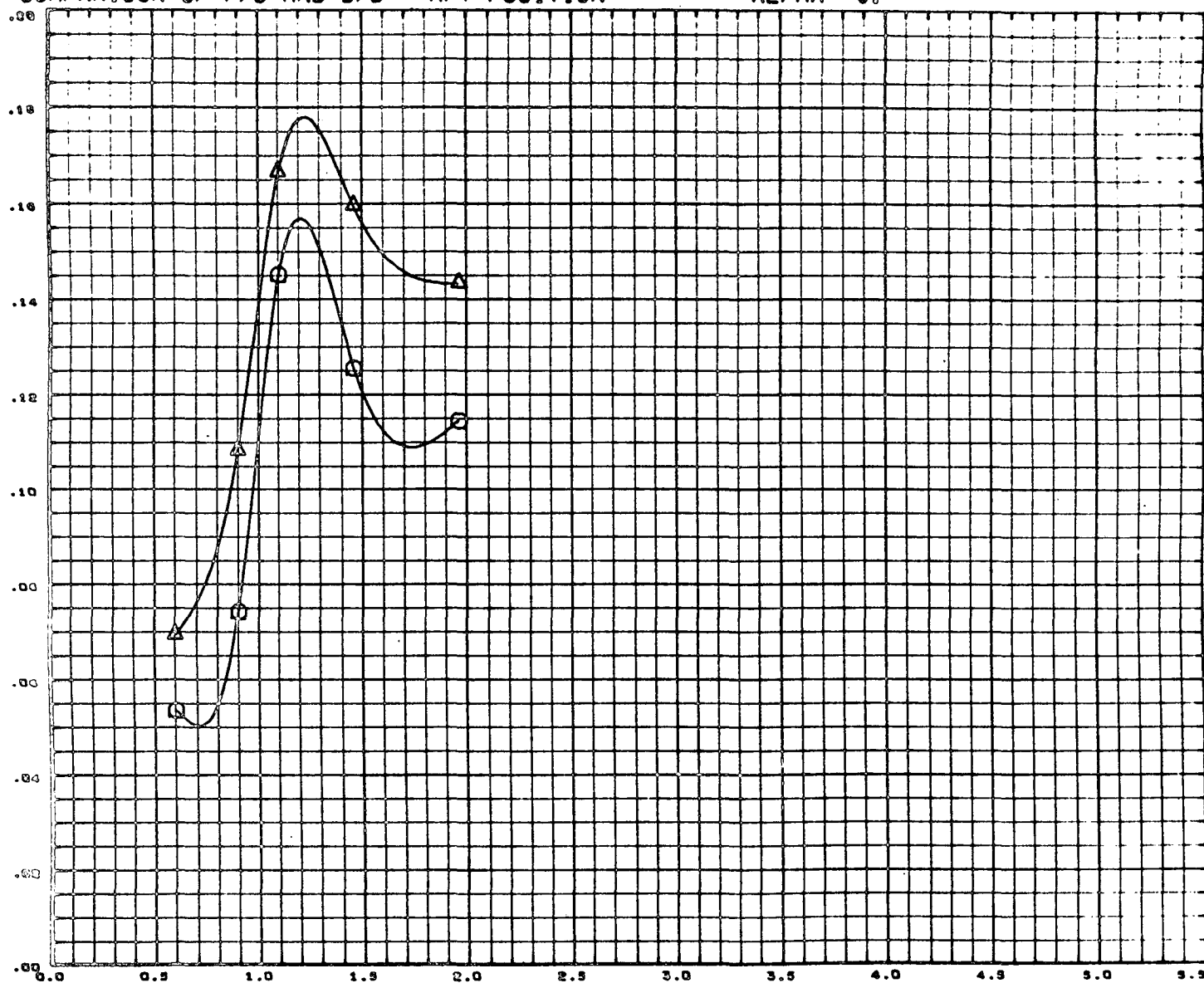
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	3.000	0.000	0.000	SREF	15.6560 SQ IN
0.000	5.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

COMPARISON OF P/B AND B/B - AFT POSITION

ALPHA = 0.

FOREBODY AXIAL FORCE COEFFICIENT, CAF



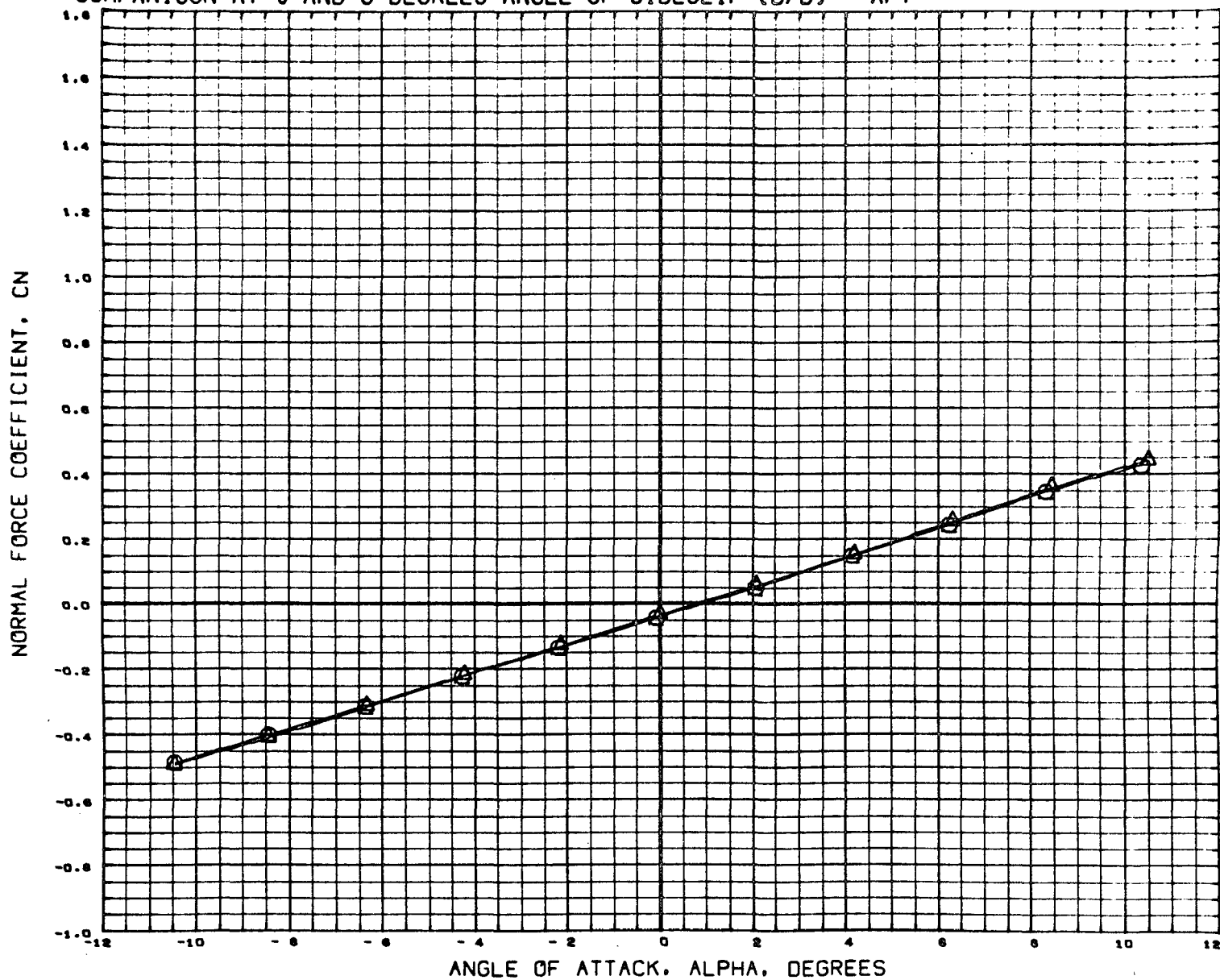
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(L3241A)	MSFC490 NR/GD LAUNCH B2014BW14V8+B5W17V17
(L3254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

MACH NUMBER

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	3.000	0.000	0.000	SREF 15.6560 30 IN
0.000	3.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

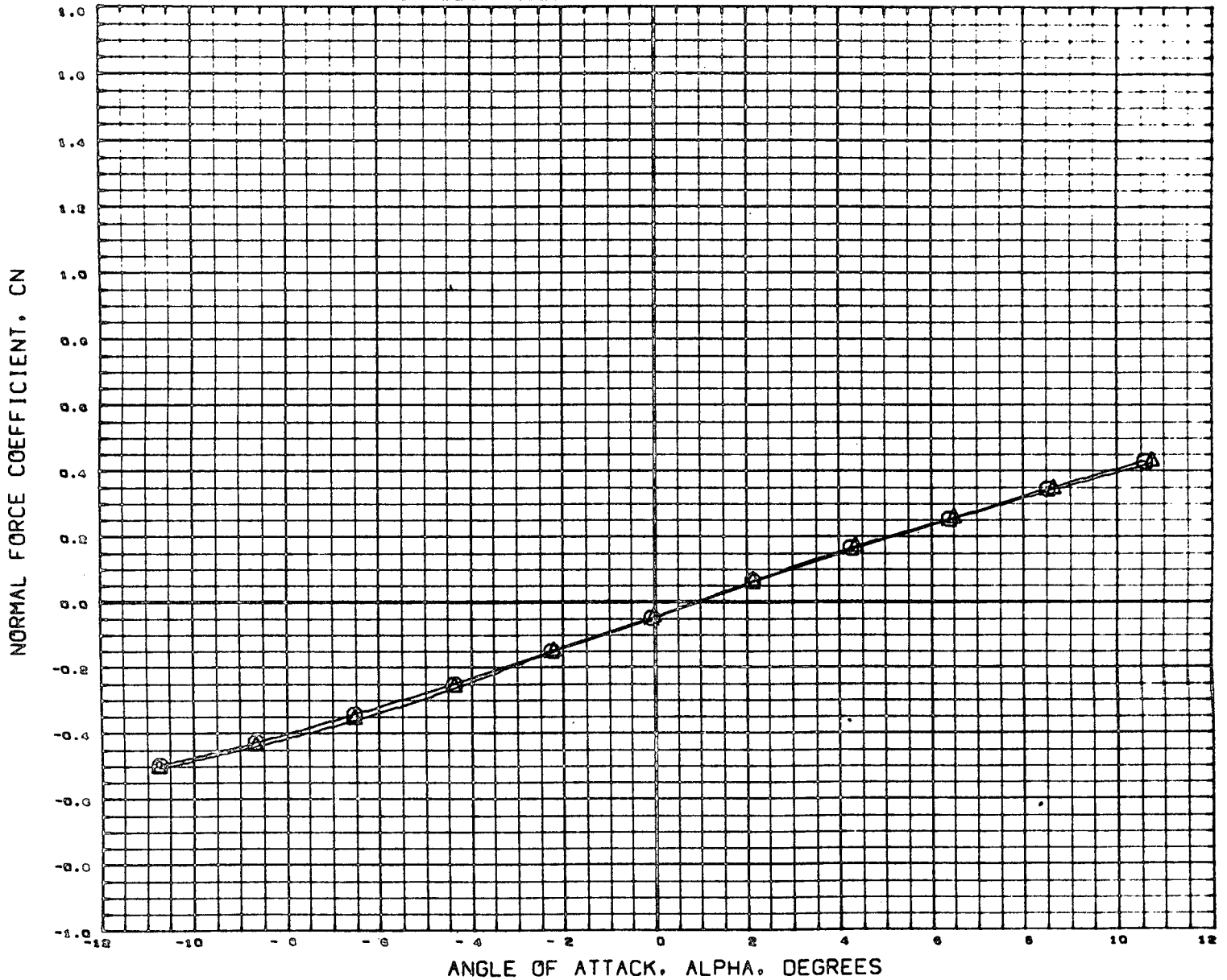


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3254A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	5.000	0.000	0.000	SREF	15.6560 SQ IN
(H3255A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	5.000	6.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRF	0.0000
						YMRF	0.0000
						ZMRF	0.0000
						SCALE	0.0035 SCALE

MACH .60

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

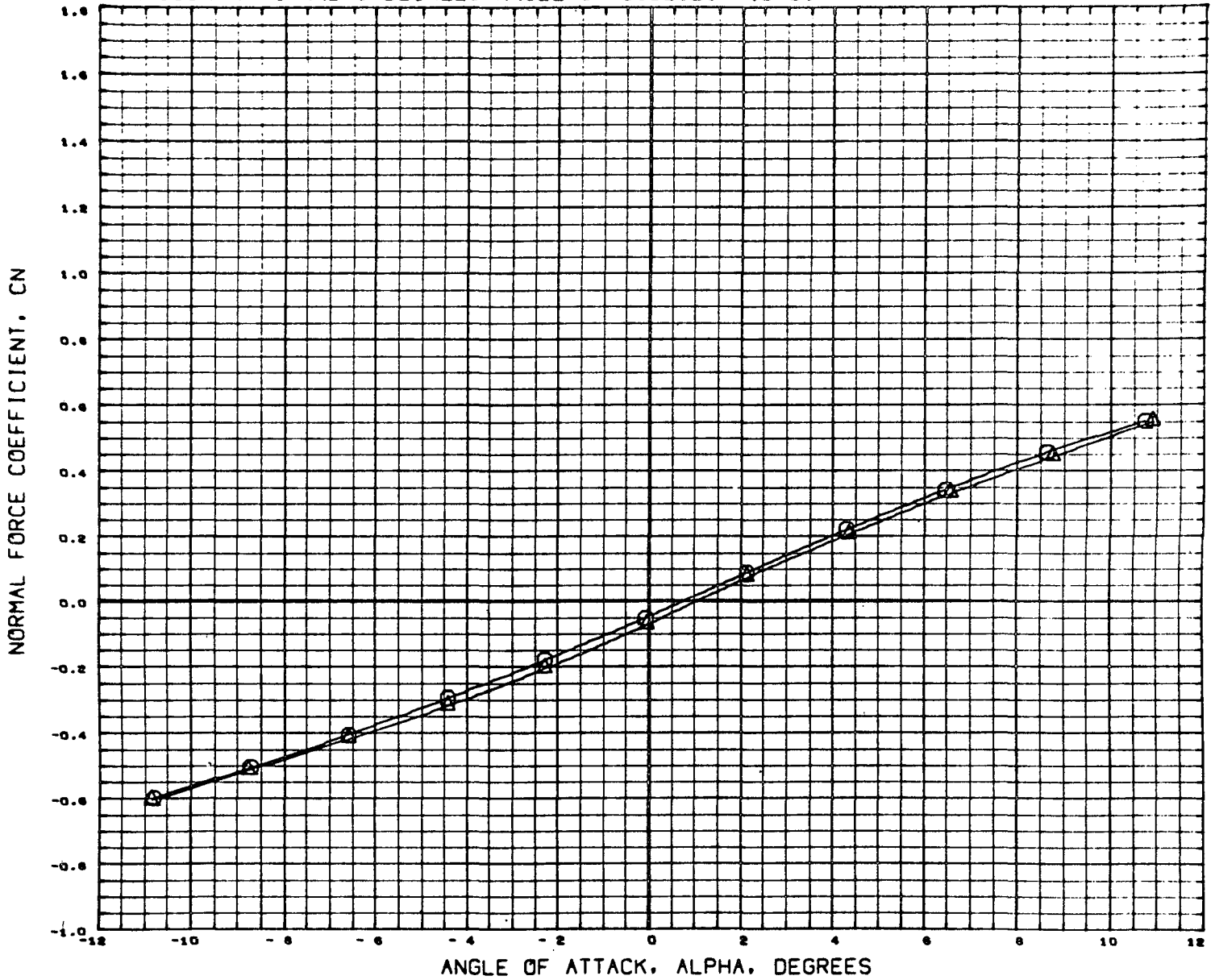


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBSINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3254A)	M3FC490 NR/GO LAUNCH B20C48W14V8+B3W17V17	0.000	9.000	0.000	0.000	SREF	15.6560 SQ IN
(H3255A)	M3FC490 NR/GO LAUNCH B20C48W14V8+B3W17V17	0.000	9.000	6.000	0.000	LREF	3.0990 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

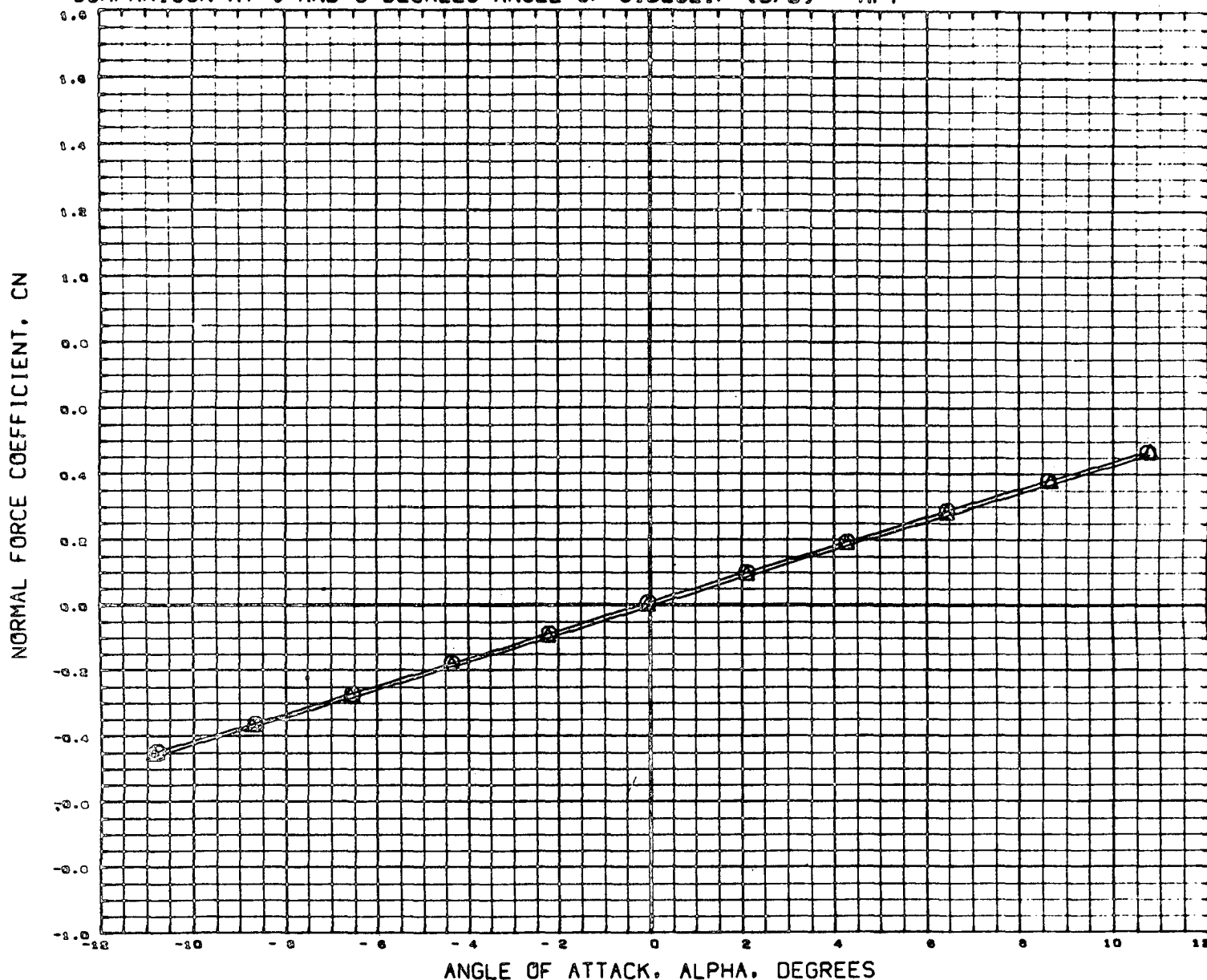


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POS1TH	BETA	ELVATR	REFERENCE INFORMATION	
(H3254A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	0.000	5.000	0.000	0.000	SREF	15.6560 SQ IN
(H3255A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	0.000	5.000	6.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

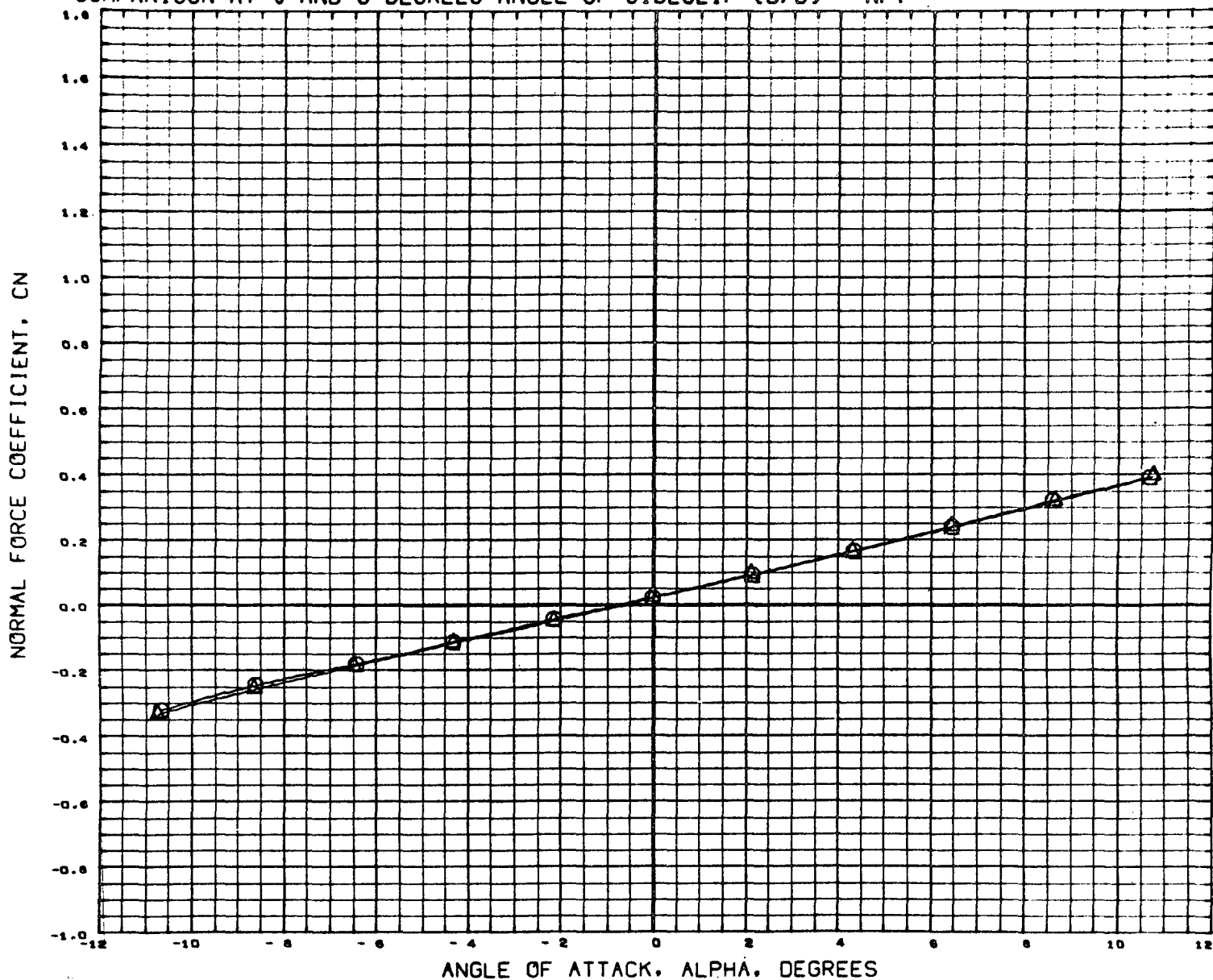




DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBIT	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(M3254A)	MSPC490 NR/GD LAUNCH B20C4BW14V8+83W17V17	0.000	5.000	0.000	0.000	SREF	15.6560 SQ IN
(M3255A)	MSPC490 NR/GD LAUNCH B20C4BW14V8+83W17V17	0.000	5.000	6.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



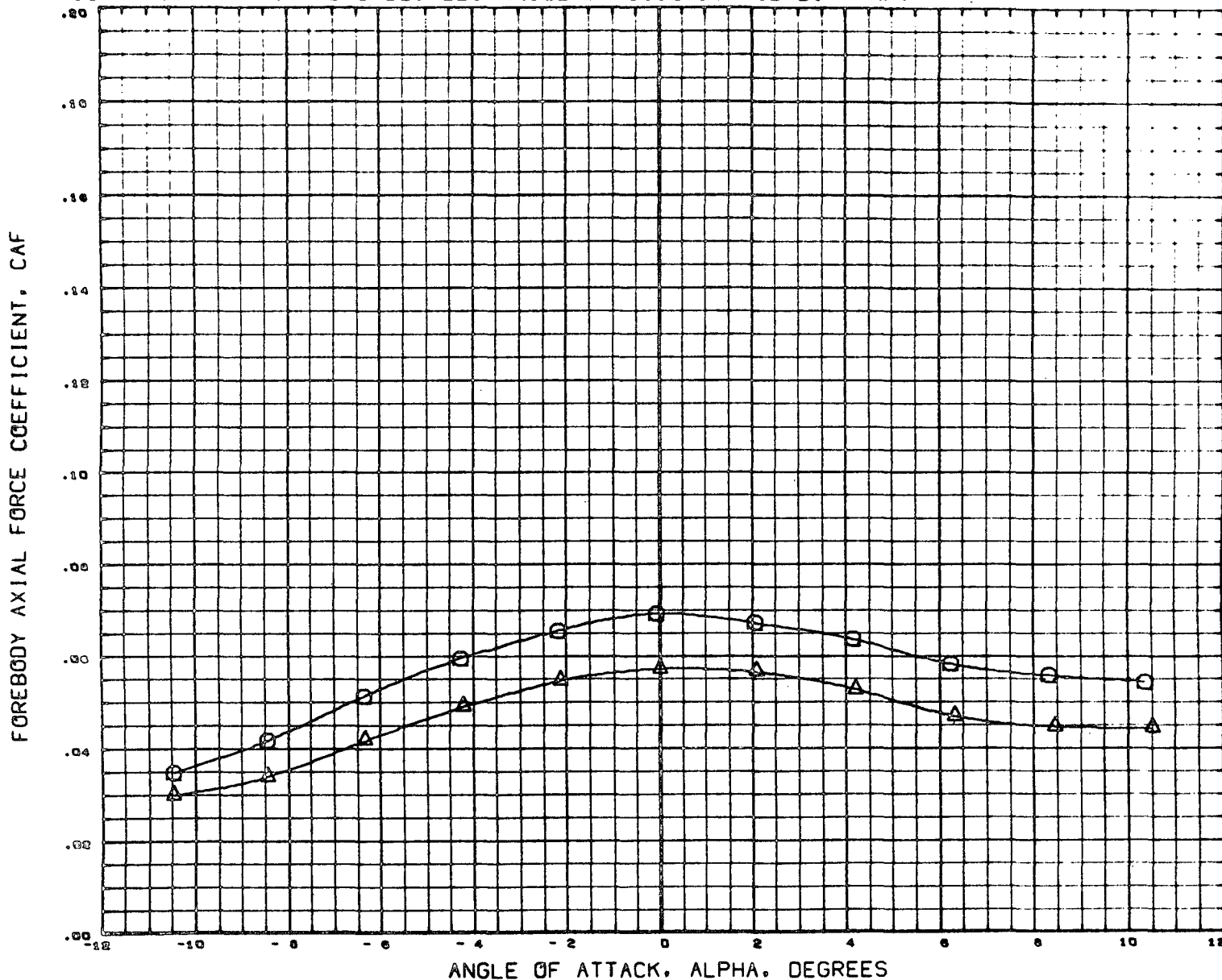
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3254A) 	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17
(H3255A) 	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	5.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	6.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.96

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



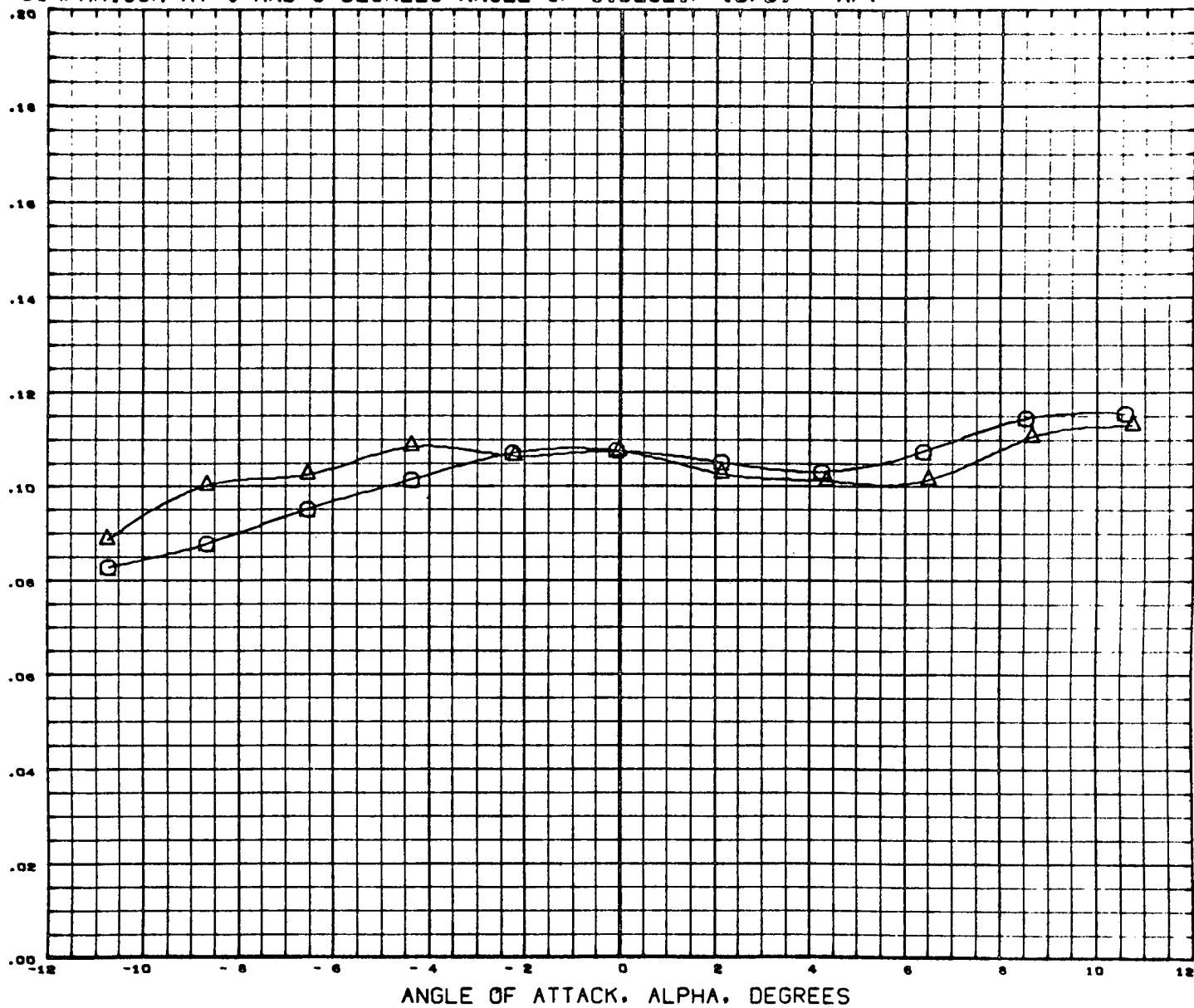
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3234A) Q	MSFC490 NR/GD LAUNCH 820C4BW14V8+83W17V17	0.000	5.000	0.000	0.000	SREF	15.6560 50 IN
(H3235A) Δ	MSFC490 NR/GD LAUNCH 820C4BW14V8+83W17V17	0.000	5.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	0.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

FOREBODY AXIAL FORCE COEFFICIENT, CAF



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3254A) H3FC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (H3255A) H3FC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

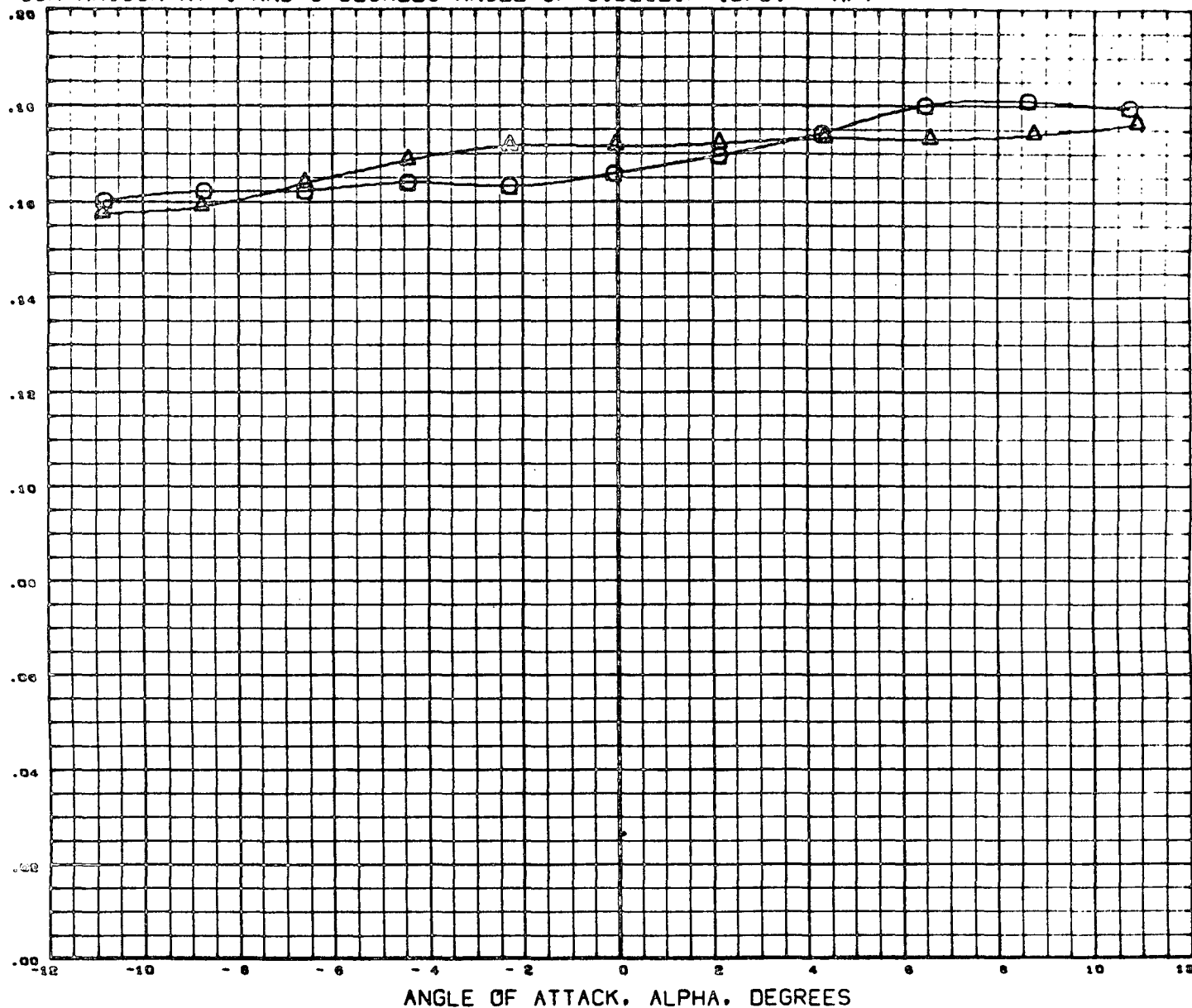
ORBIT	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	5.000	0.000	0.000	SREF 15.6560 30 IN
0.000	5.000	6.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .90

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

FOREBODY AXIAL FORCE COEFFICIENT, CAF



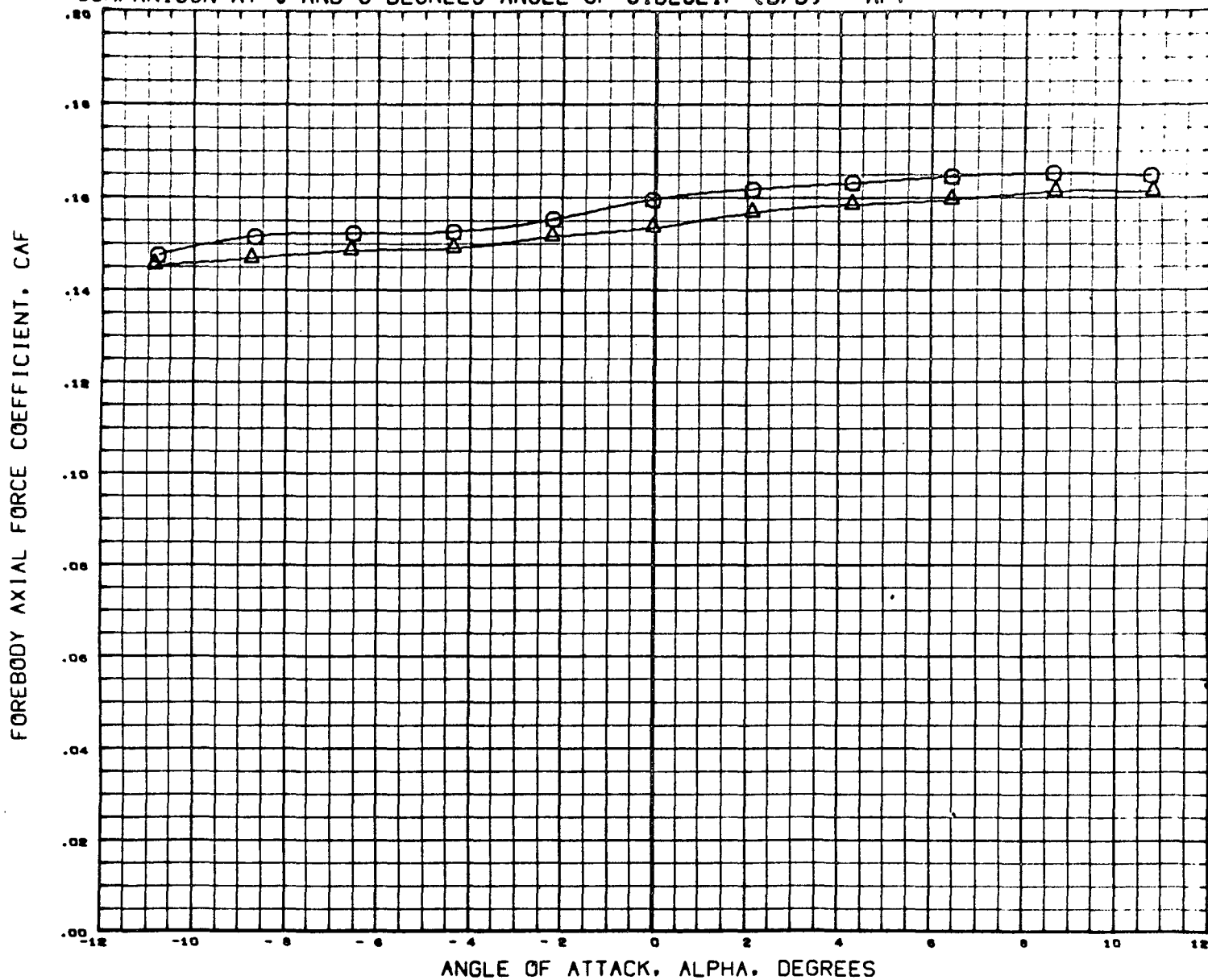
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(H3255A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBIT	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	3.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	3.000	6.000	0.000	LREF 3.0990 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.10

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3254A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (H3255A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC POSITN BETA ELVATR
 0.000 5.000 0.000 0.000
 0.000 5.000 6.000 0.000

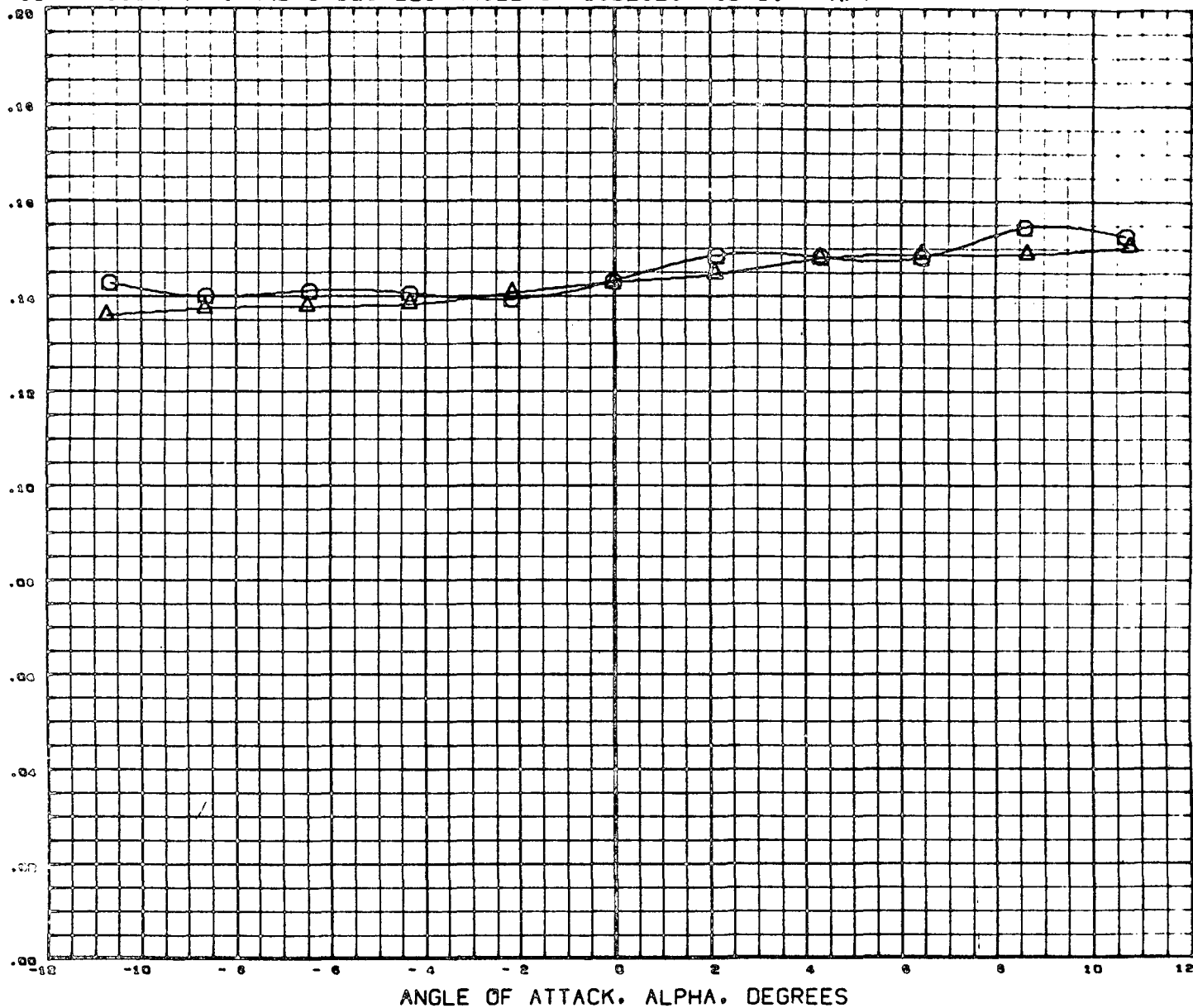
REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0990 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.46

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

FOREBODY AXIAL FORCE COEFFICIENT, CAF



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3294A)	HSPC490 NR/GD LAUNCH B20C48W14V8+B3W17V17
(H3295A)	HSPC490 NR/GD LAUNCH B20C48W14V8+B3W17V17

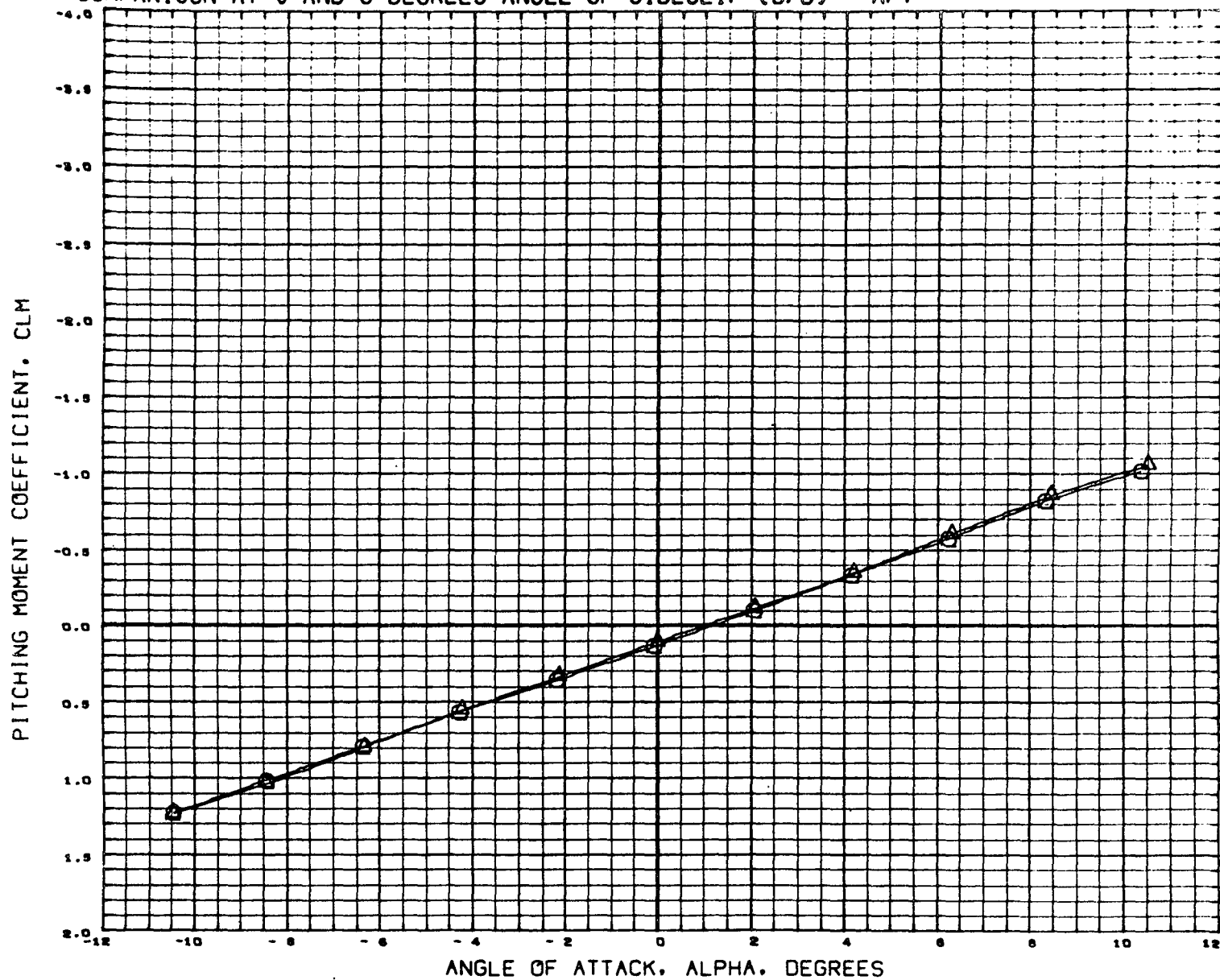
ORBIT	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	9.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	9.000	6.000	0.000	LREF 3.0950 INCHES
				BREF 0.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH

1.96

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



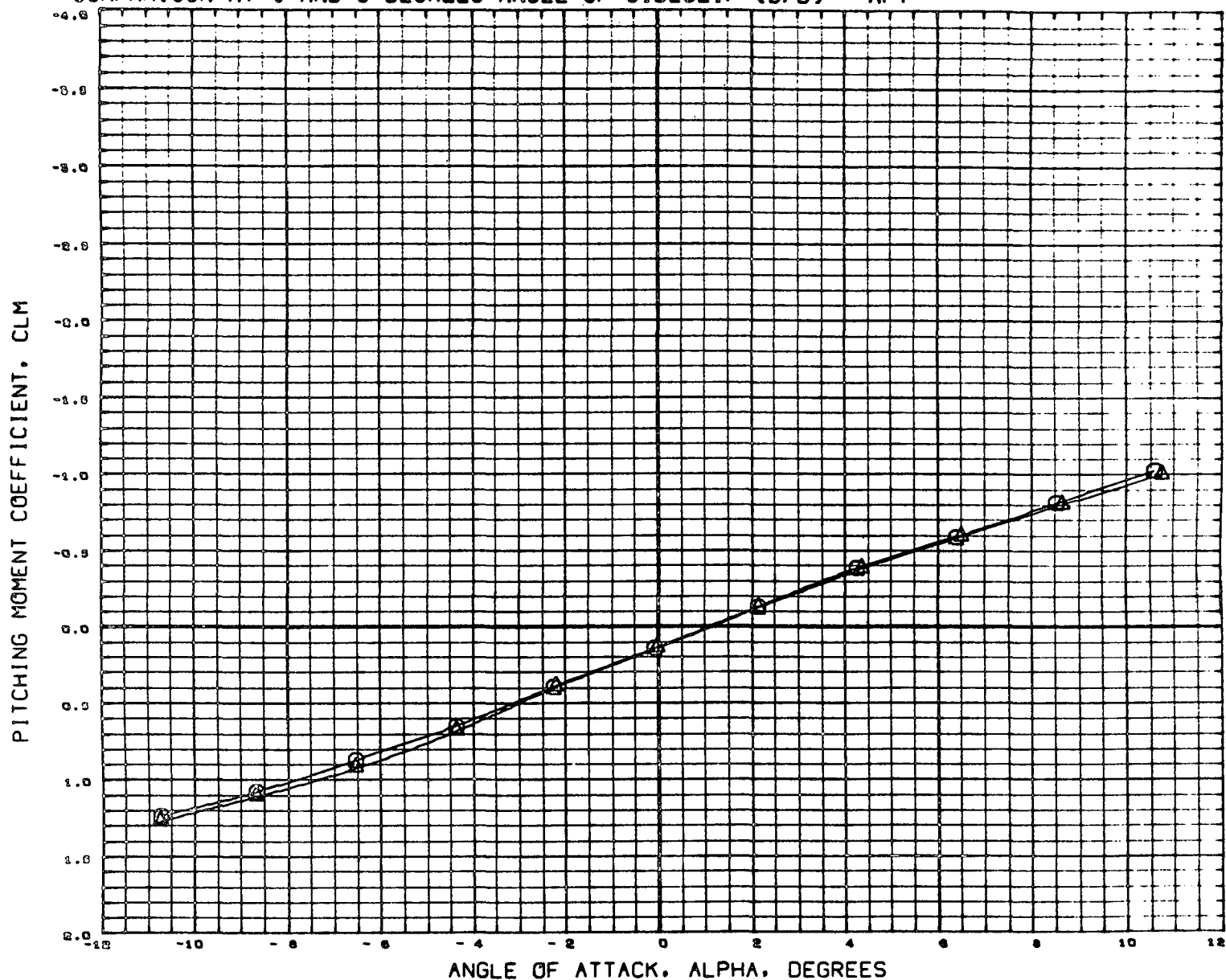
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3254A) Q HSPC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
 (H3255A) A HSPC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	5.000	0.000	0.000	SREF	15.6560 SQ IN
0.000	5.000	6.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRR	0.0000
				YMRR	0.0000
				ZMRR	0.0000
				SCALE	0.0035 SCALE

MACH .60

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

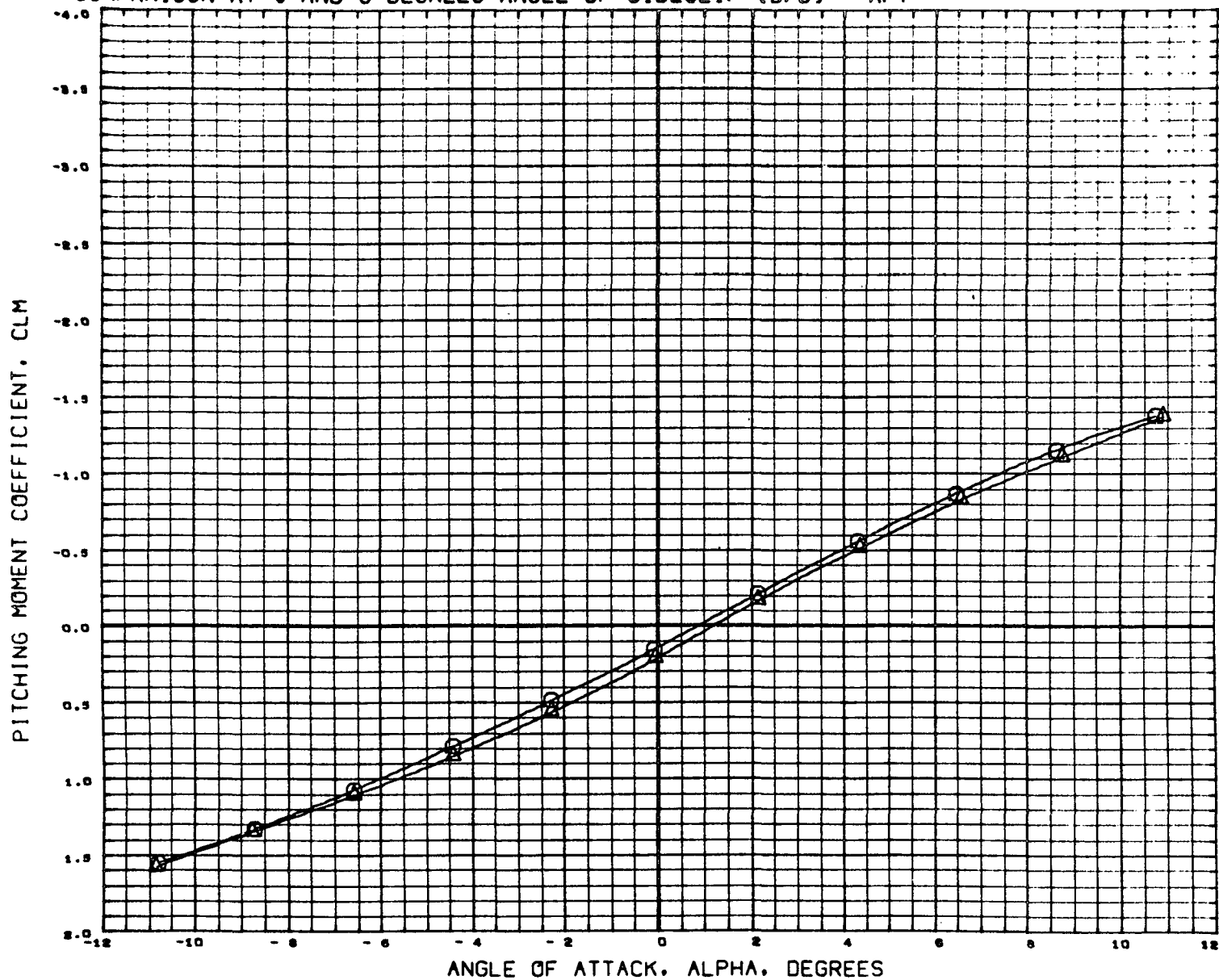


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3294A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	0.000	9.000	0.000	0.000	SREF	15.6560 30 IN
(H3295A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	0.000	9.000	0.000	0.000	LREF	3.0990 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

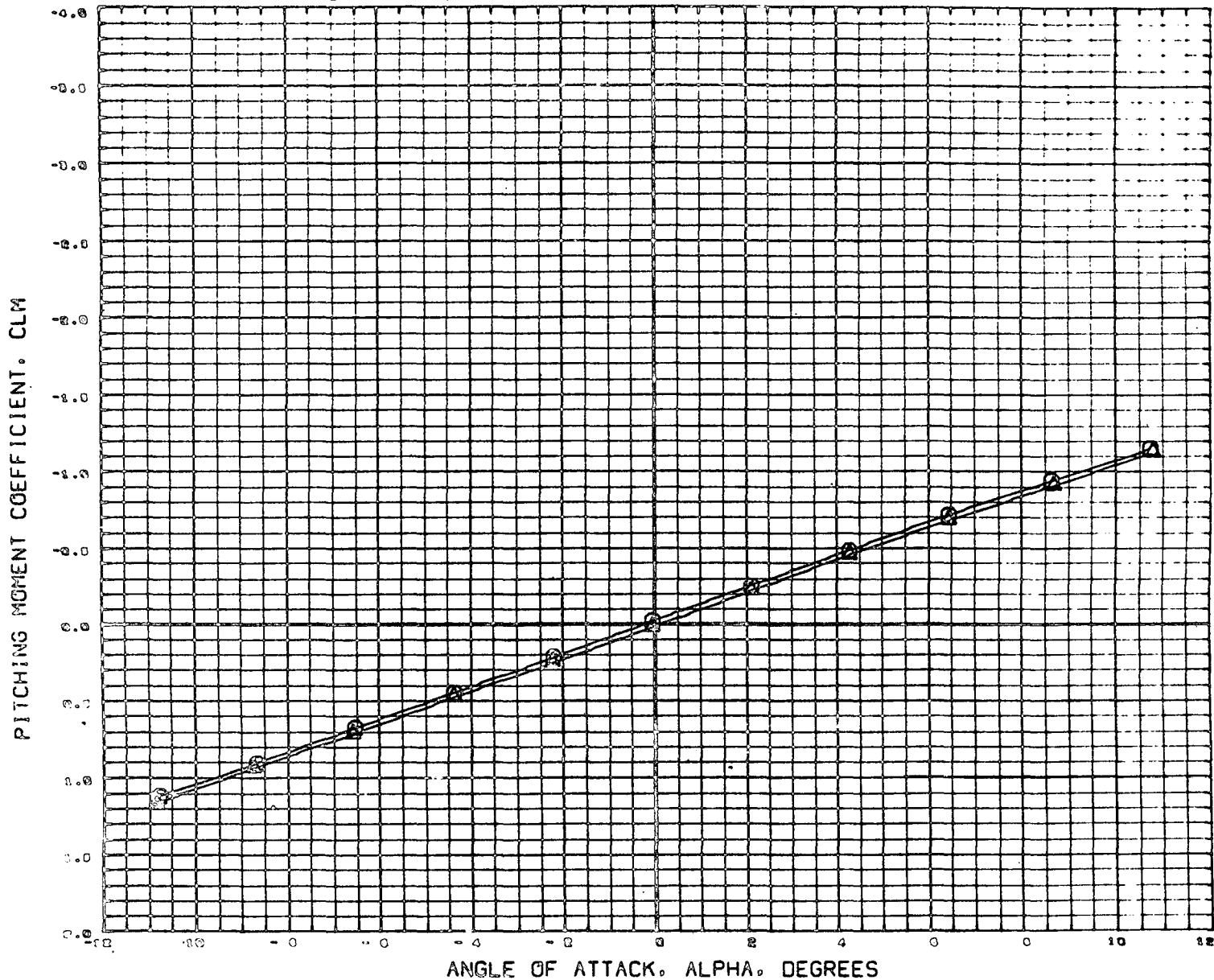


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3254A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	0.000	5.000	0.000	0.000	SREF	15.6560 SQ IN
(H3255A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	0.000	5.000	6.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



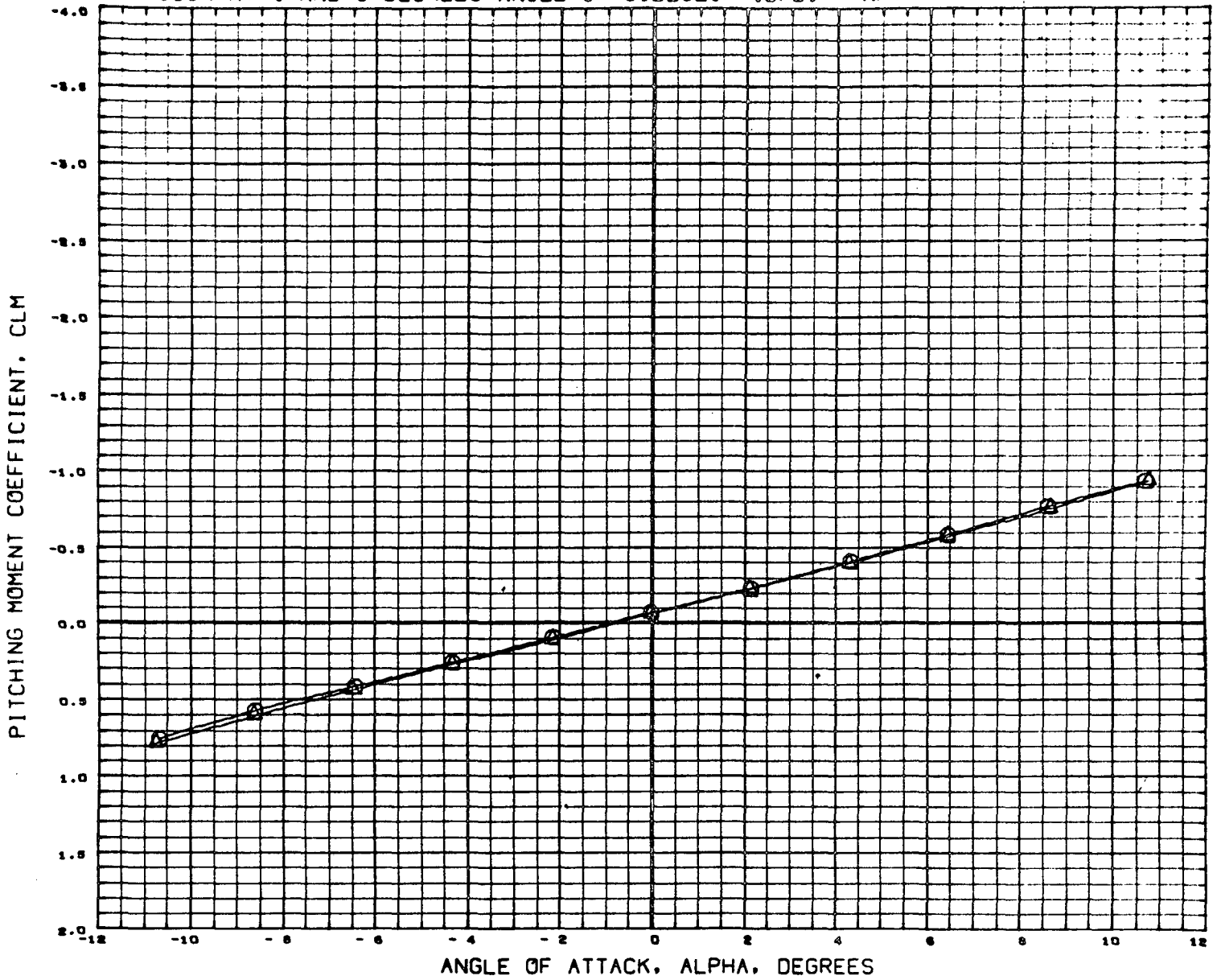
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3294A) M37C400 NR/GO LAUNCH B20C48W14V8+85W17V17
 (H3295A) M37C400 NR/GO LAUNCH B20C48W14V8+85W17V17

ORDINC	POBITN	BETA	CLVATR	REFERENCE INFORMATION
0.000	9.000	0.000	0.000	SREF 15.6560 50 IN
0.000	9.000	0.000	0.000	LREF 3.0950 INCHES
				OREP 0.0990 INCHES
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0039 SCALE

MACH 1.46

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

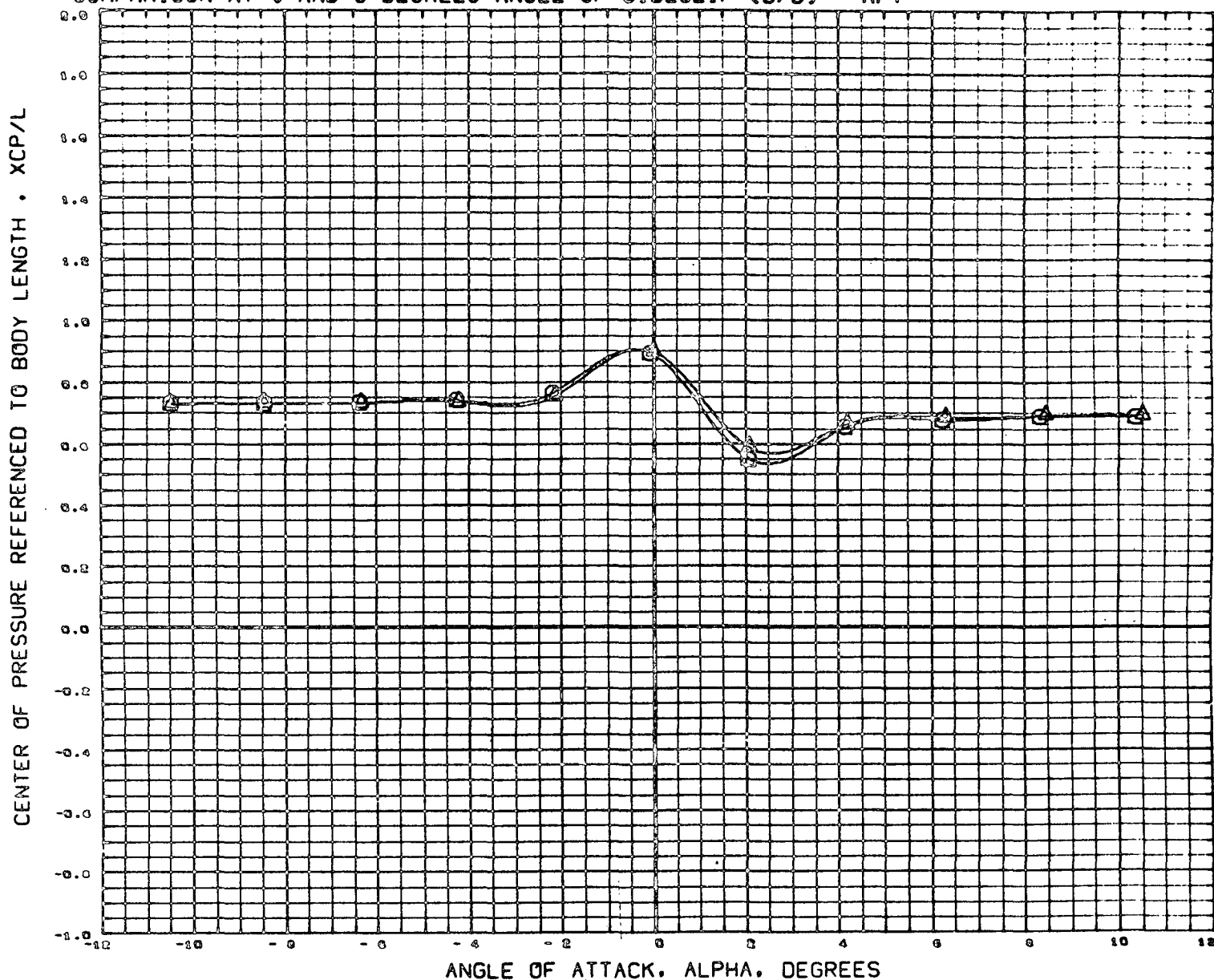


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	5.000	0.000	0.000	SREF	15.6560 SQ IN
(H3255A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	5.000	6.000	0.000	LREF	3.0990 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (8/8) - AFT



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3294A) M37C490 NR/GD LAUNCH 820C48W14V8+89W17V17
 (H3295A) M37C490 NR/GD LAUNCH 820C48W14V8+89W17V17

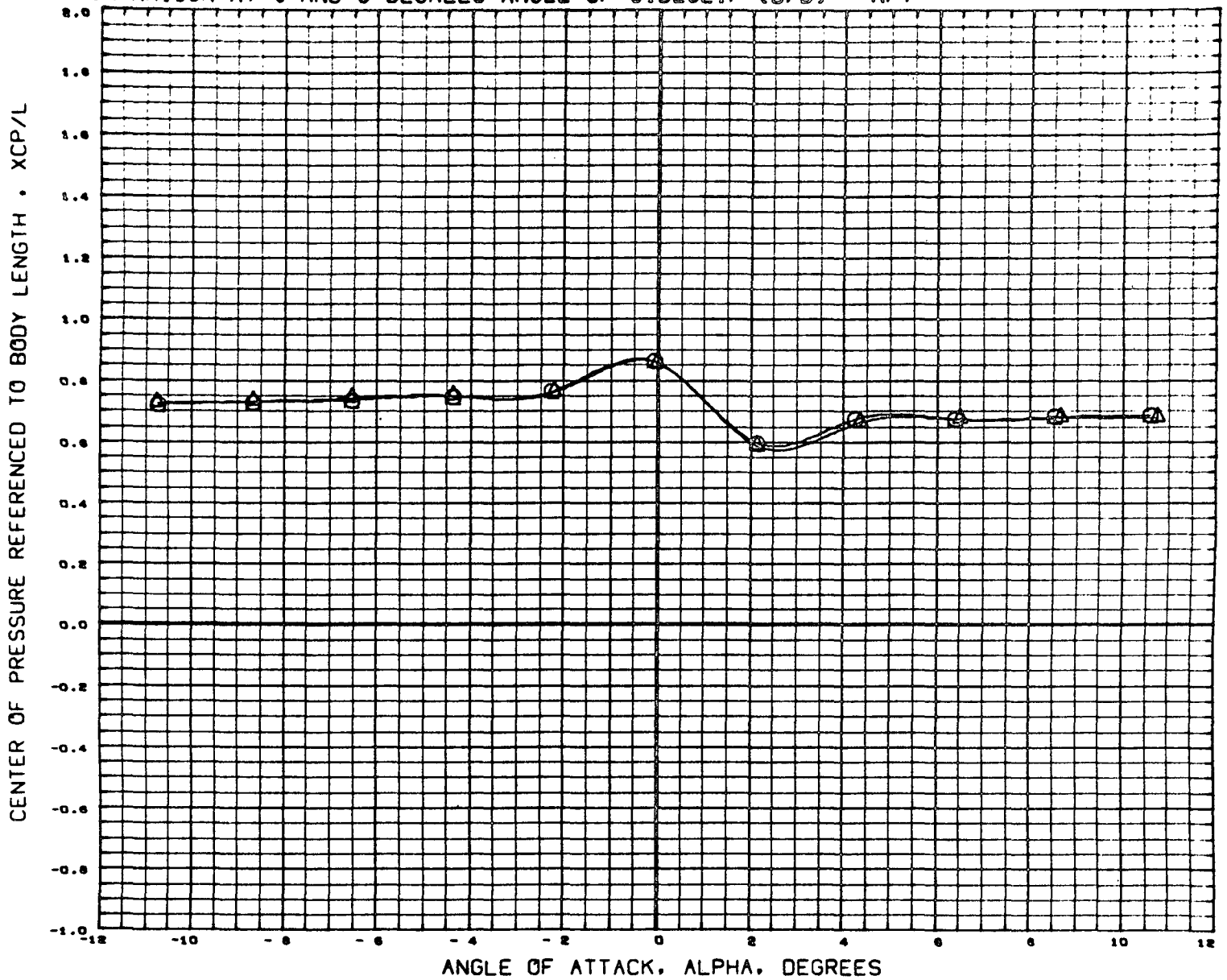
ORBINC POSITN BETA ELVATR
 0.000 9.000 0.000 0.000
 0.000 9.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 80 IN
 LREF 3.0950 INCHES
 SREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0039 SCALE

MACH .60

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



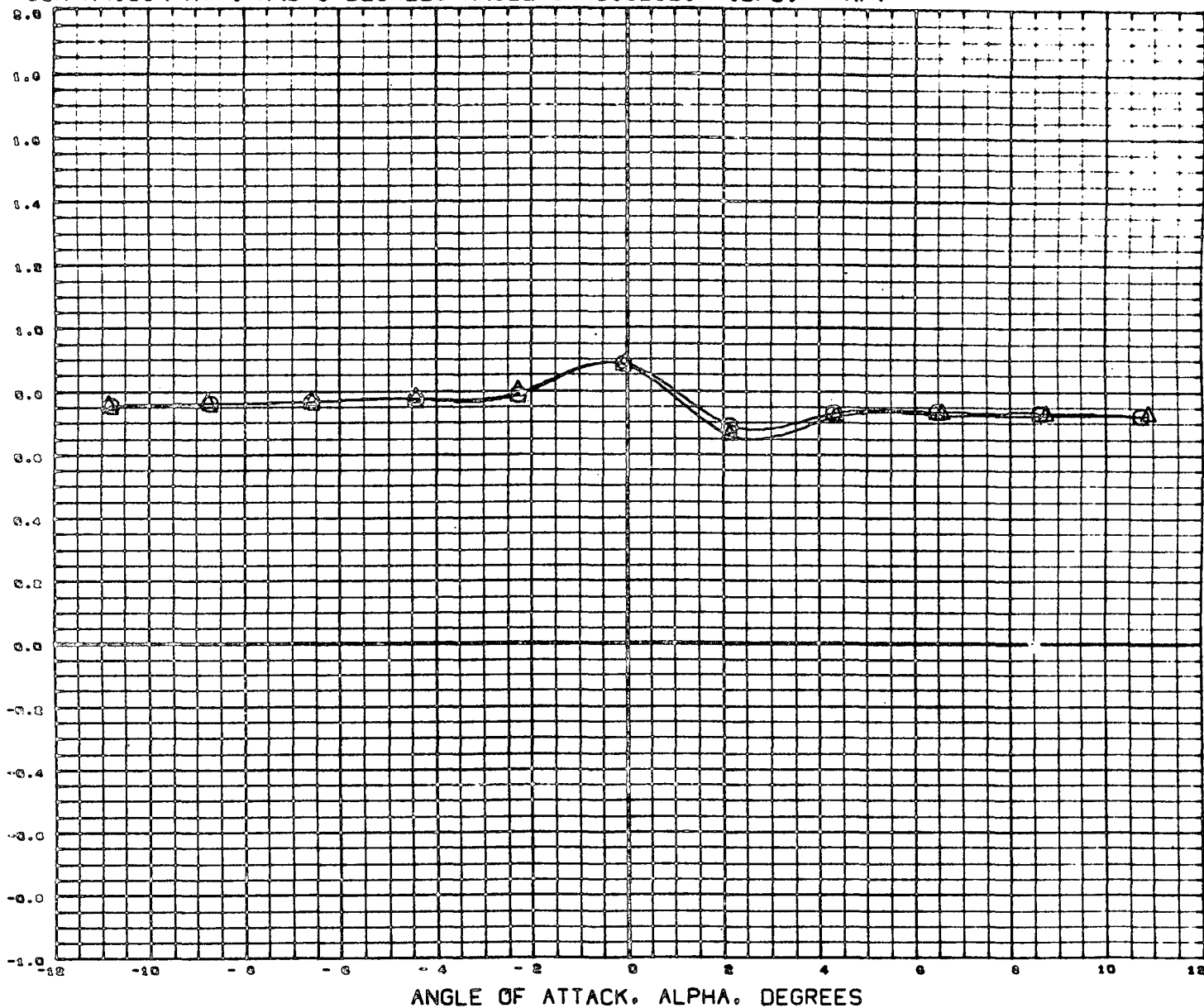
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3254A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	0.000	5.000	0.000	0.000	SREF	15.6560 50 IN
(H3255A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17	0.000	5.000	6.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH .90

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

CENTER OF PRESSURE REFERENCED TO BODY LENGTH • XCP/L



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3294A)	MSFC490 NR/GD LAUNCH 820C48W14V8+B5W17V17
(H3295A)	MSFC490 NR/GD LAUNCH 820C48W14V8+B5W17V17

ORBIT	POSITN	BETA	ELVATR
0.000	5.000	0.000	0.000
0.000	5.000	0.000	0.000

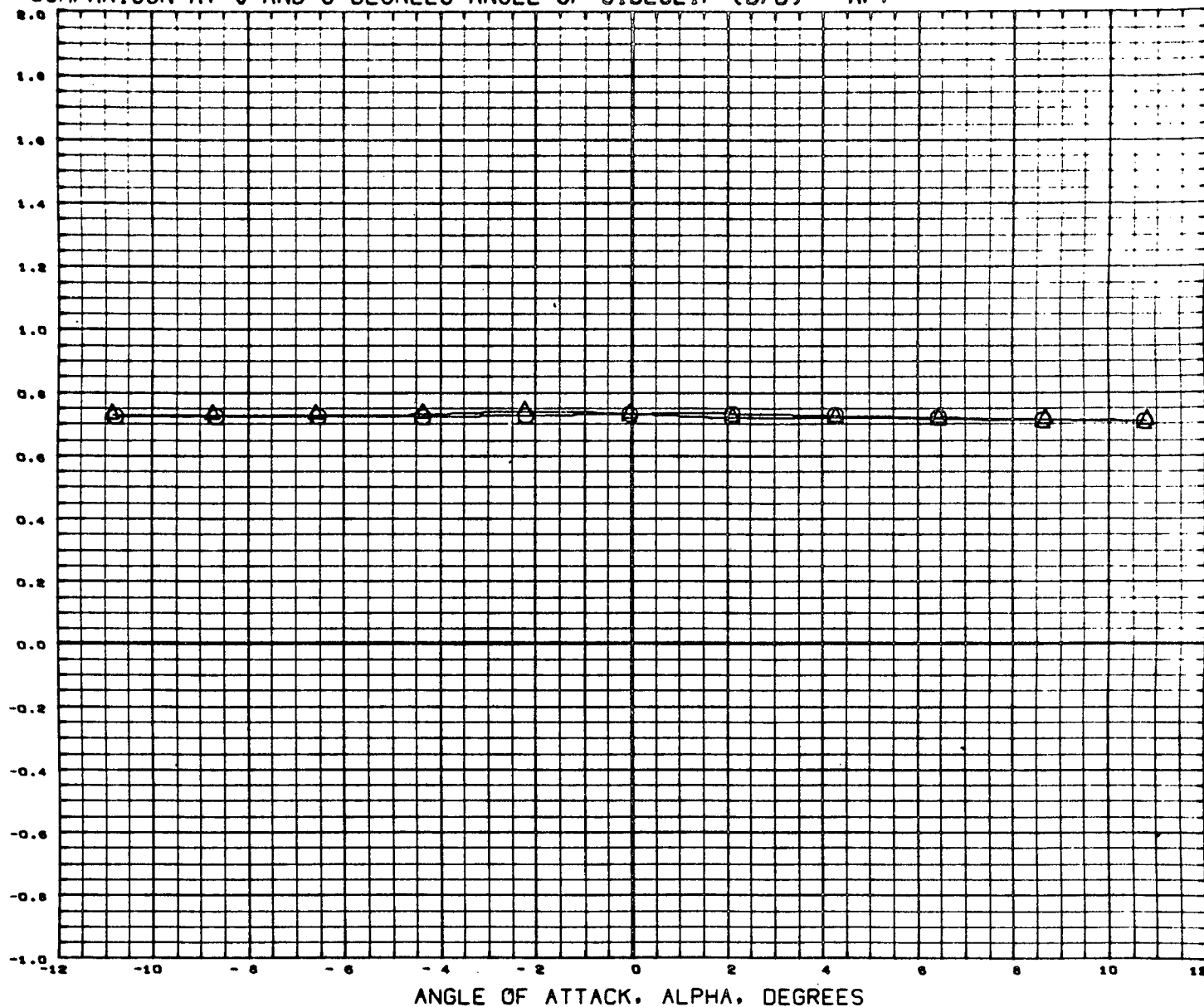
REFERENCE INFORMATION	
SREF	15.6380 SQ IN
LREF	3.0950 INCHES
BREF	6.0950 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 1.10

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

CENTER OF PRESSURE REFERENCED TO BODY LENGTH * XCP/L

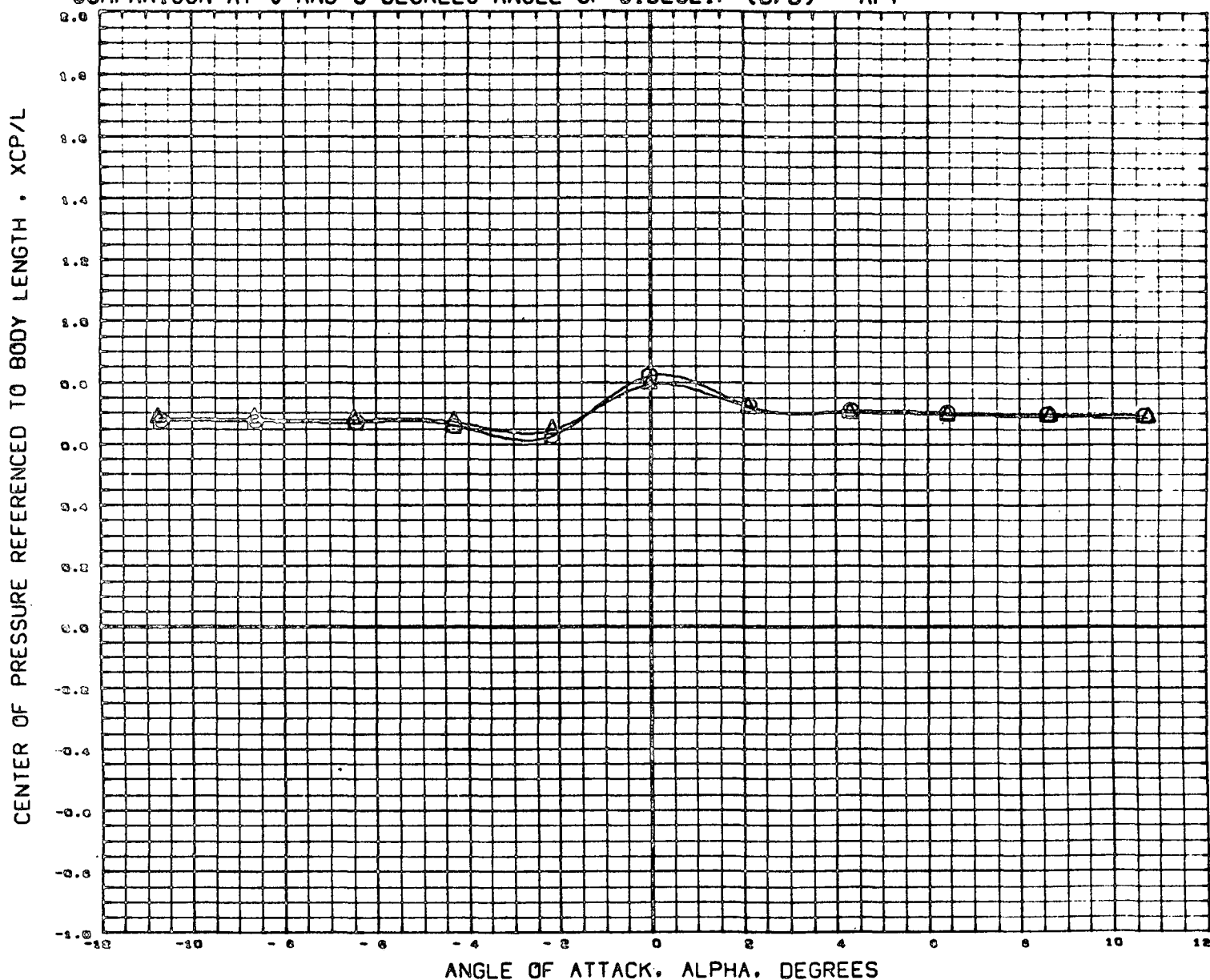


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3294A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	9.000	0.000	0.000	SREF	15.6560 SQ IN
(H3295A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	9.000	6.000	0.000	LREF	3.0990 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3294A) M3PC490 NR/6D LAUNCH B20C4BW14V8+85W17V17
 (H3299A) M3PC490 NR/6D LAUNCH B20C4BW14V8+85W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	5.000	0.000	0.000	BREF	15.6560 30 IN
0.000	5.000	6.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



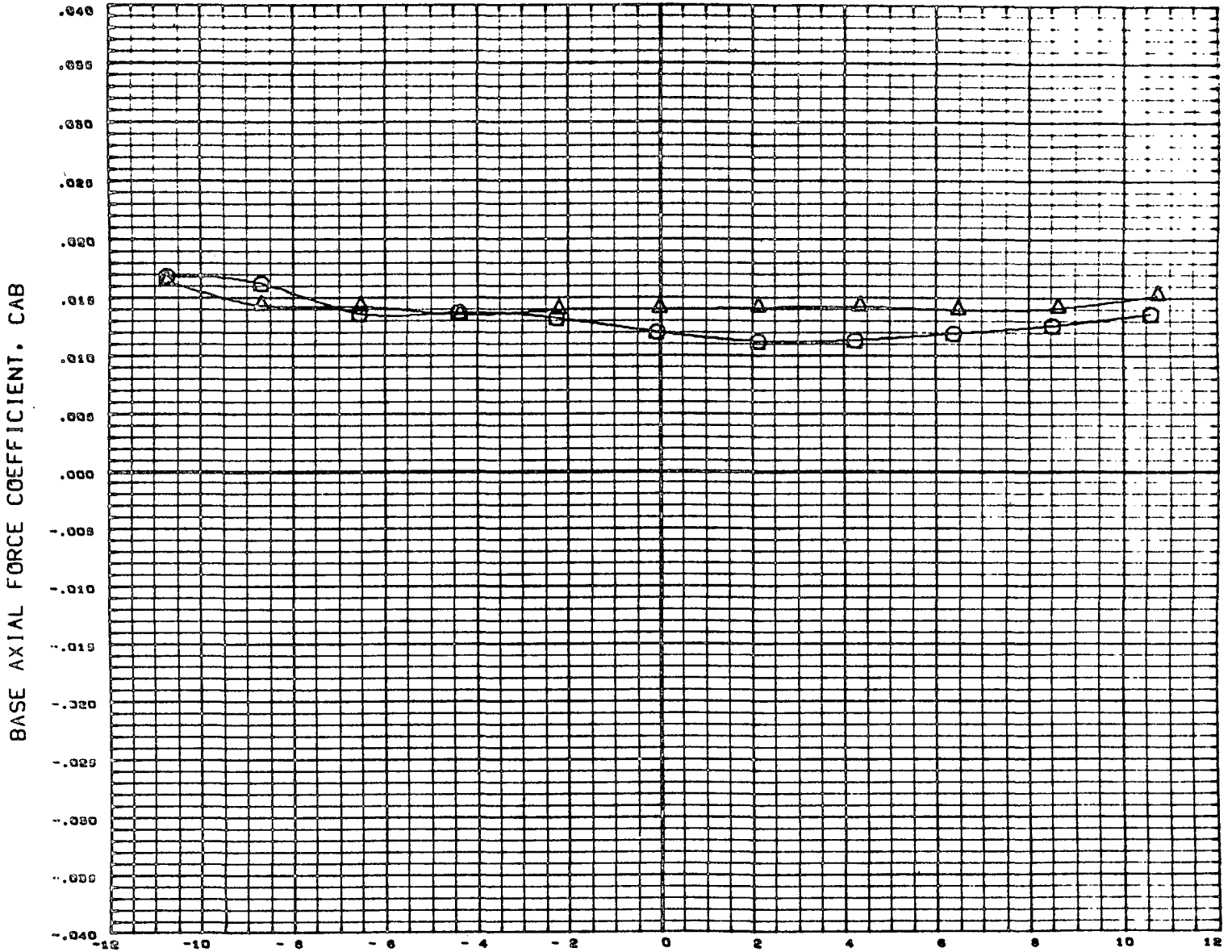
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3254A) O	H3FC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(H3255A) Δ	H3FC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	5.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	6.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .60

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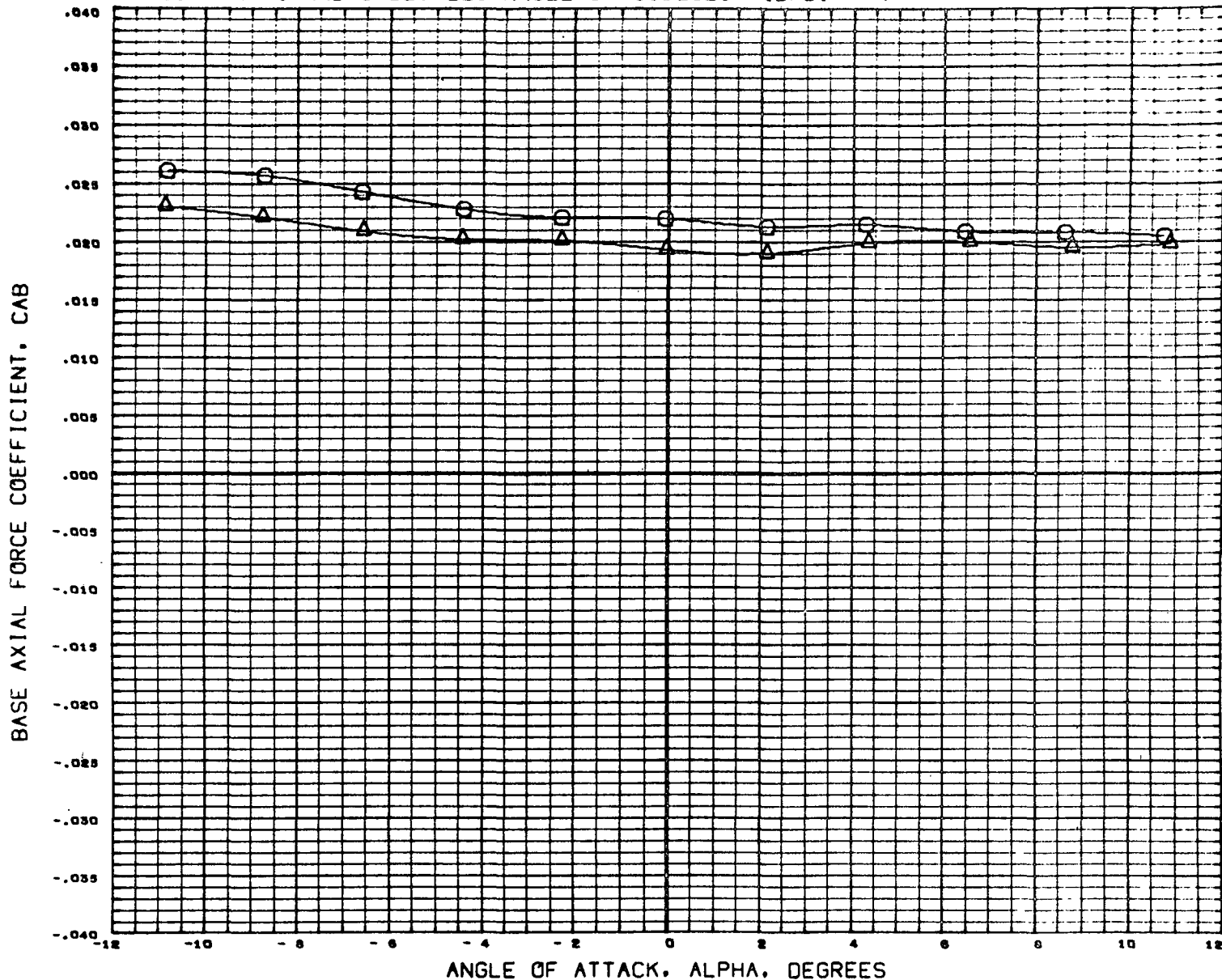
COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3294A)	M3PC490 NR/GD LAUNCH 820C48W14V8+83W17V17	0.000	9.000	0.000	0.000	SREF	15.6360 SQ IN
(H3295A)	M3PC490 NR/GD LAUNCH 820C48W14V8+83W17V17	0.000	9.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H3254A) MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17

(H3255A) MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17

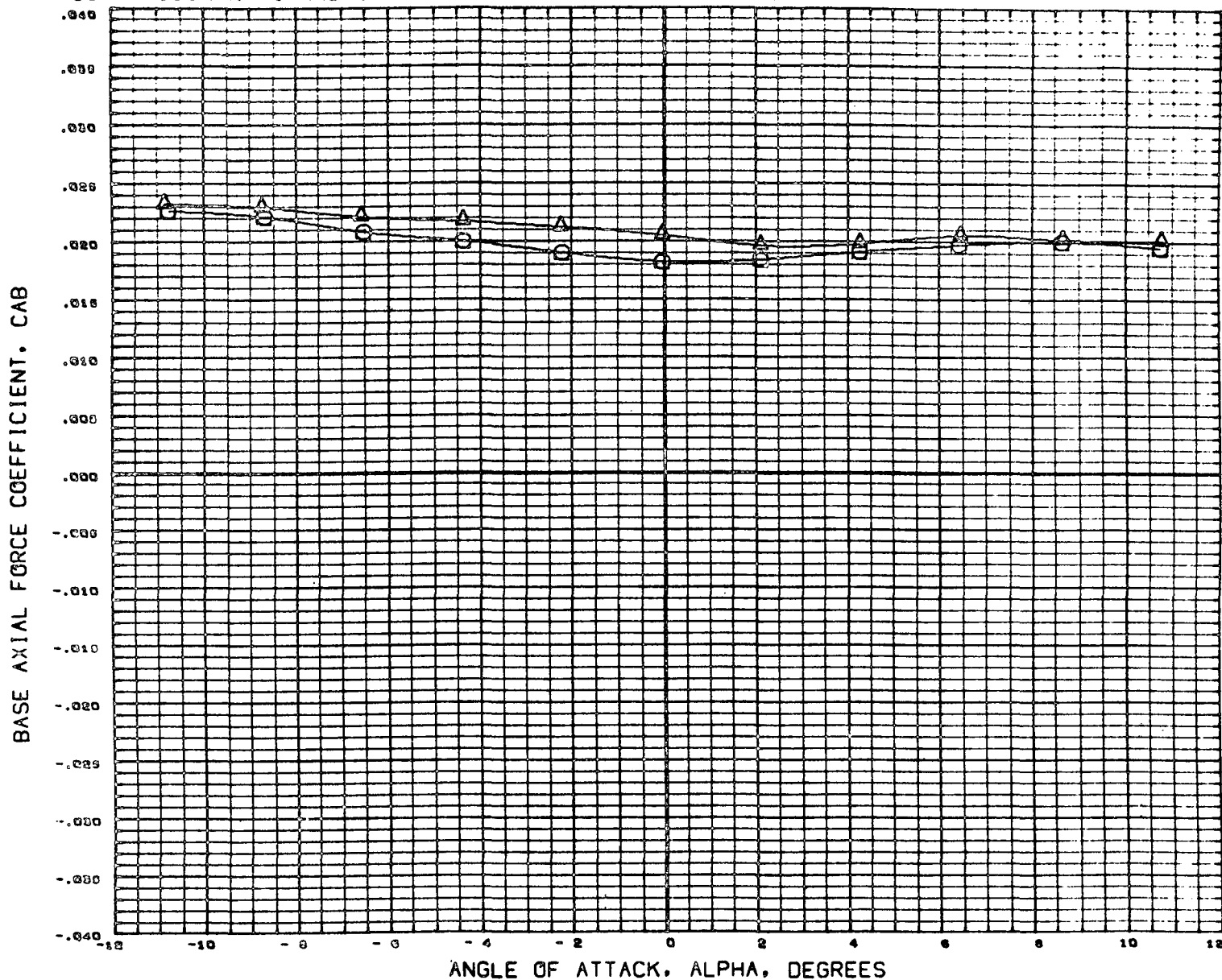
ORBINC	POSITN	BETA	ELVATR
0.000	5.000	0.000	0.000
0.000	5.000	6.000	0.000

REFERENCE INFORMATION	
SREF	15.6560 30 IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 1.10

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3294A)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17
(H3295A)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17

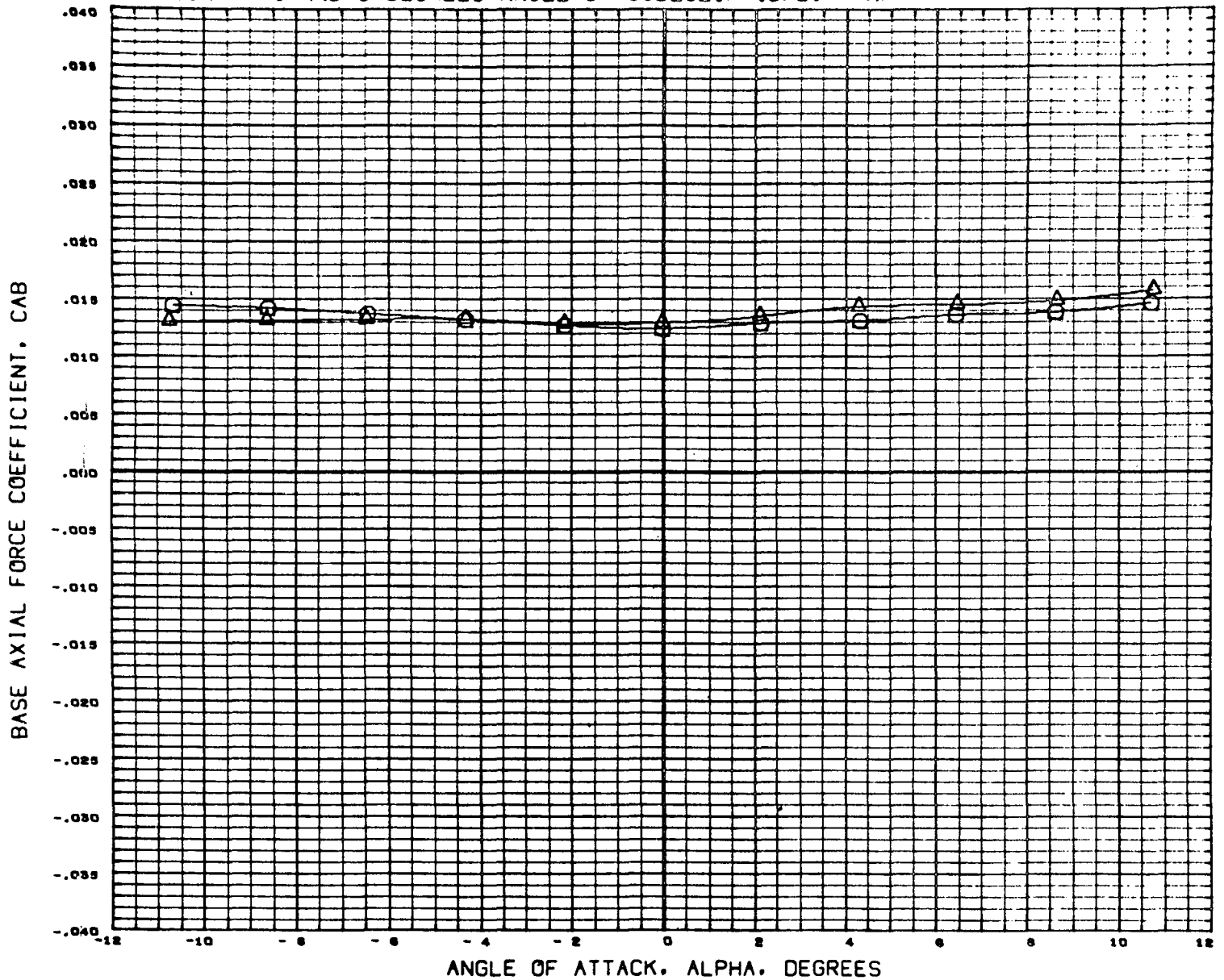
ORBIT	POSITN	BETA	ELVATR
0.000	5.000	0.000	0.000
0.000	5.000	6.000	0.000

REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0950 INCHES
BREF	0.0950 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 1.46

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



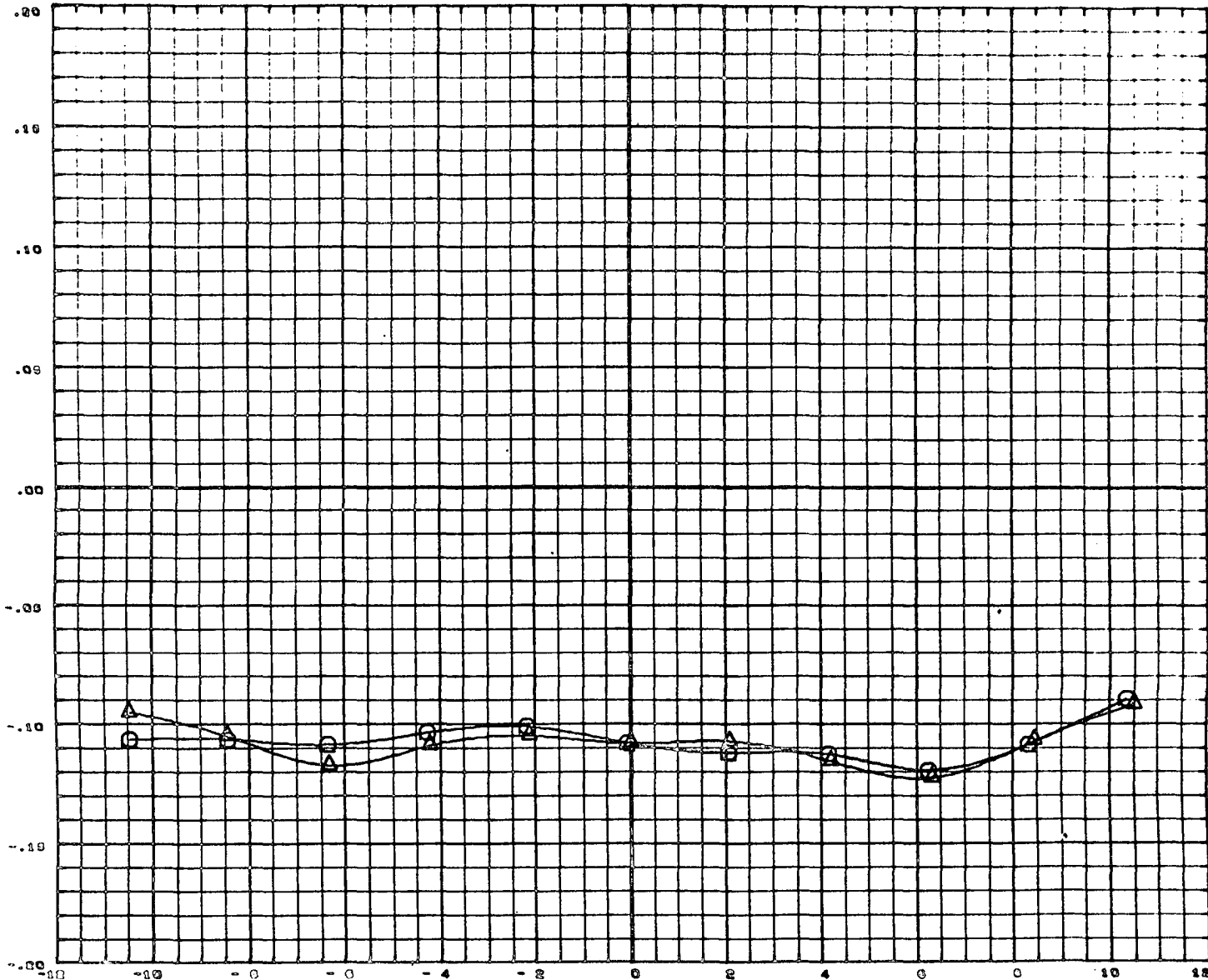
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H3294A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	5.000	0.000	0.000	SREF	15.8560 SQ IN
(H3295A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	5.000	6.000	0.000	LREF	3.0930 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH 1.96

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13294A)	HSPC490 NR/60 LAUNCH B20C4BW14V8+B3W17V17
(13299A)	HSPC490 NR/60 LAUNCH B20C4BW14V8+B3W17V17

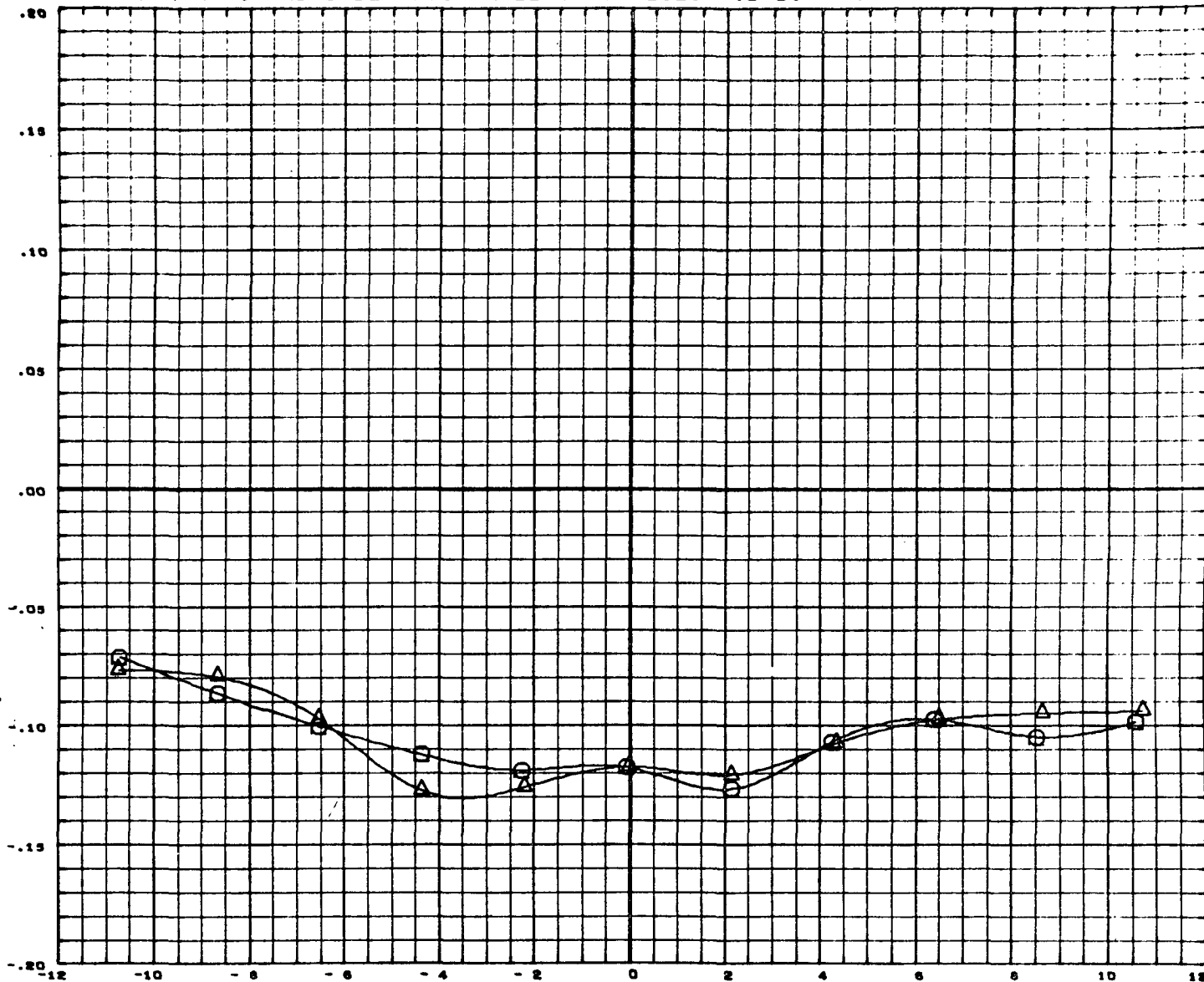
ORBIT	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	5.000	0.000	0.000	SREF 15.6560 50 IN
0.000	5.000	0.000	0.000	LREF 3.0030 INCHES
				BREF 6.0090 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0039 SCALE

MACH .60

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13254A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17
(13255A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR
0.000	9.000	0.000	0.000
0.000	9.000	0.000	0.000

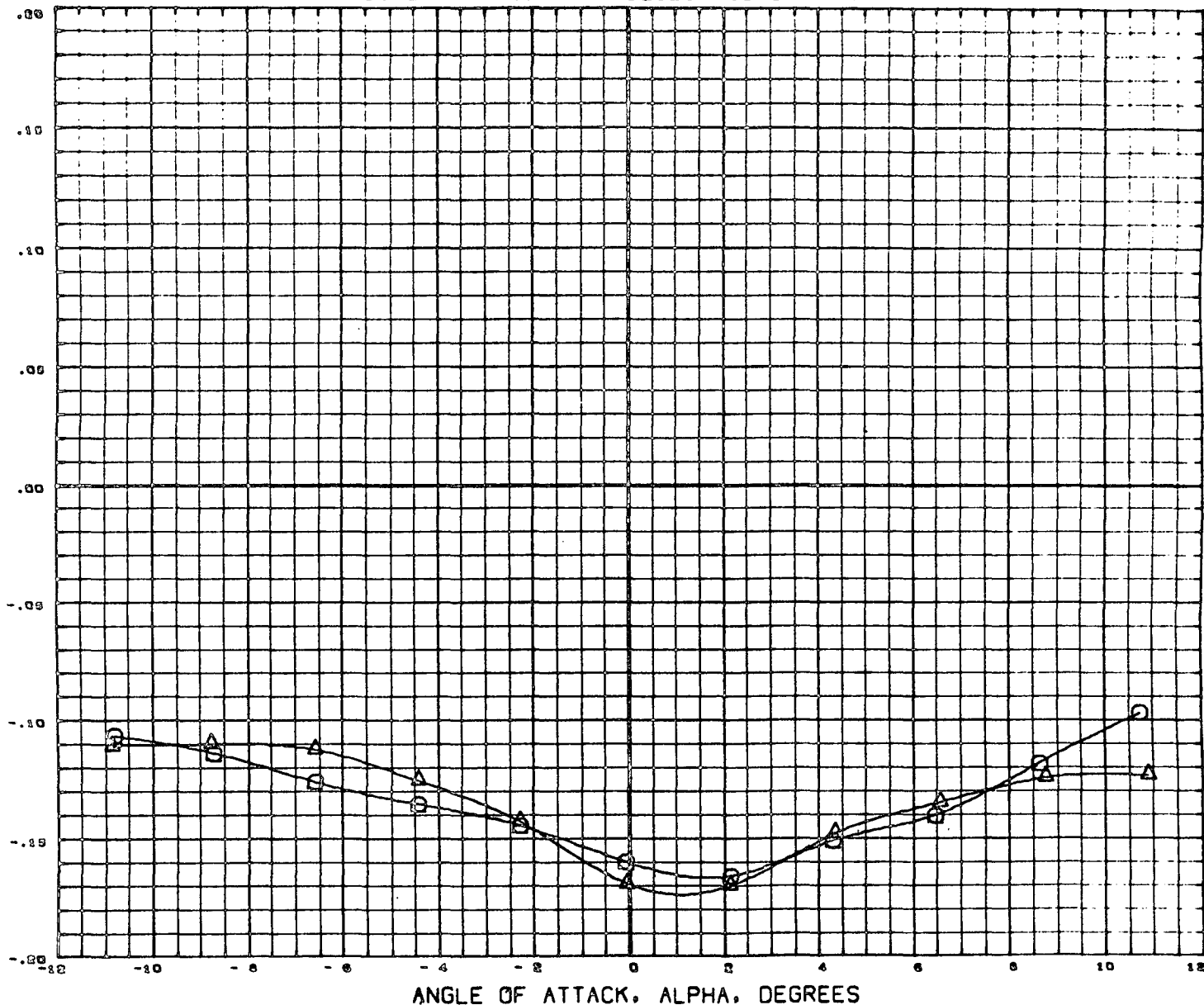
REFERENCE INFORMATION		
SREF	15.6560	30 IN
LREF	3.0930	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH .90

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13294A)	MSFC490 NR/GO LAUNCH B20C4BW14V8+B5W17V17
(13293A)	MSFC490 NR/GO LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR
0.000	5.000	0.000	0.000
0.000	5.000	0.000	0.000

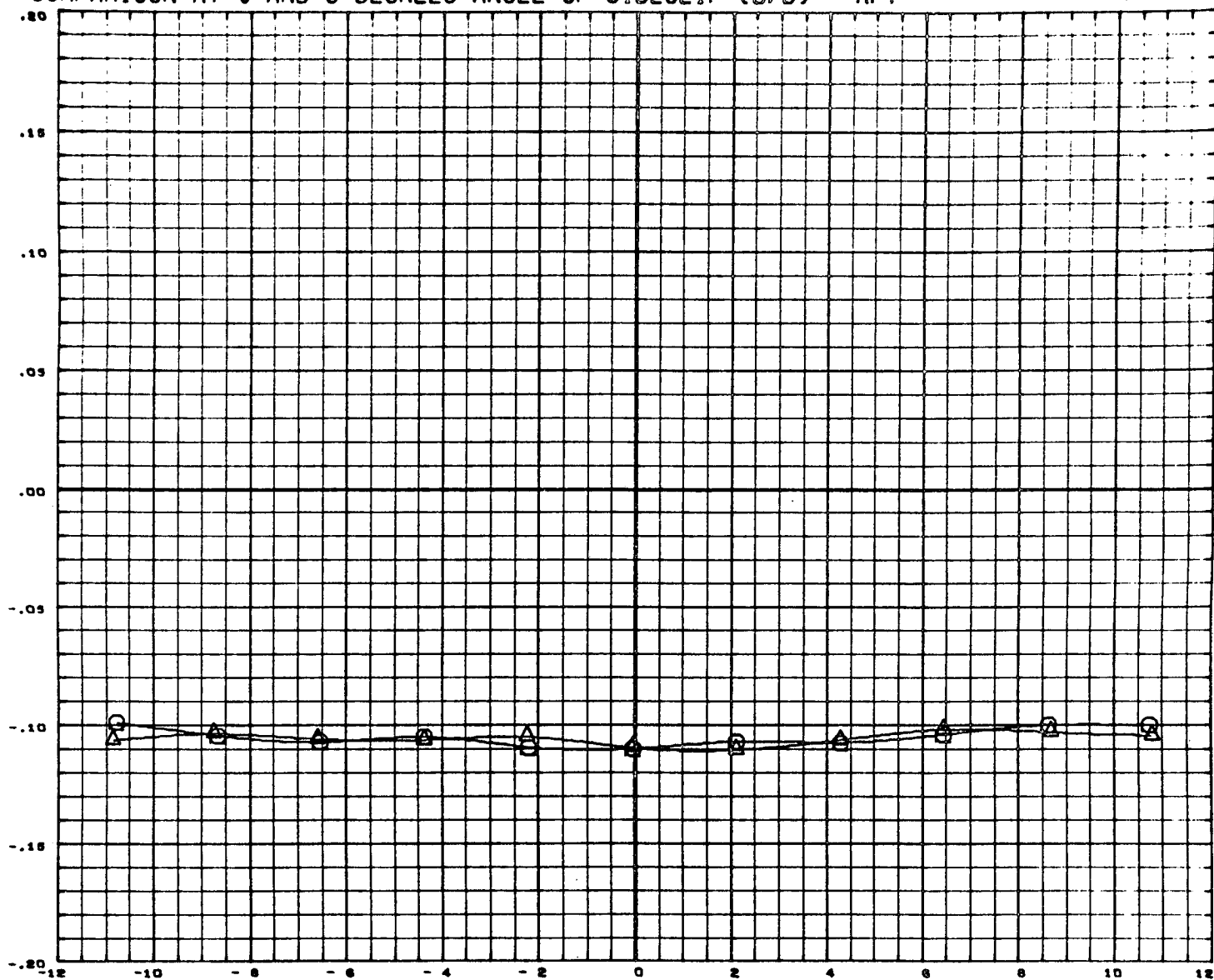
REFERENCE INFORMATION	
SREP	15.6560 SQ. IN
LREP	3.0950 INCHES
BREP	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 1.10

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13254A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17
(13255A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17

ORBINC	POSITN	BETA	ELVATR
0.000	5.000	0.000	0.000
0.000	5.000	6.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0930	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

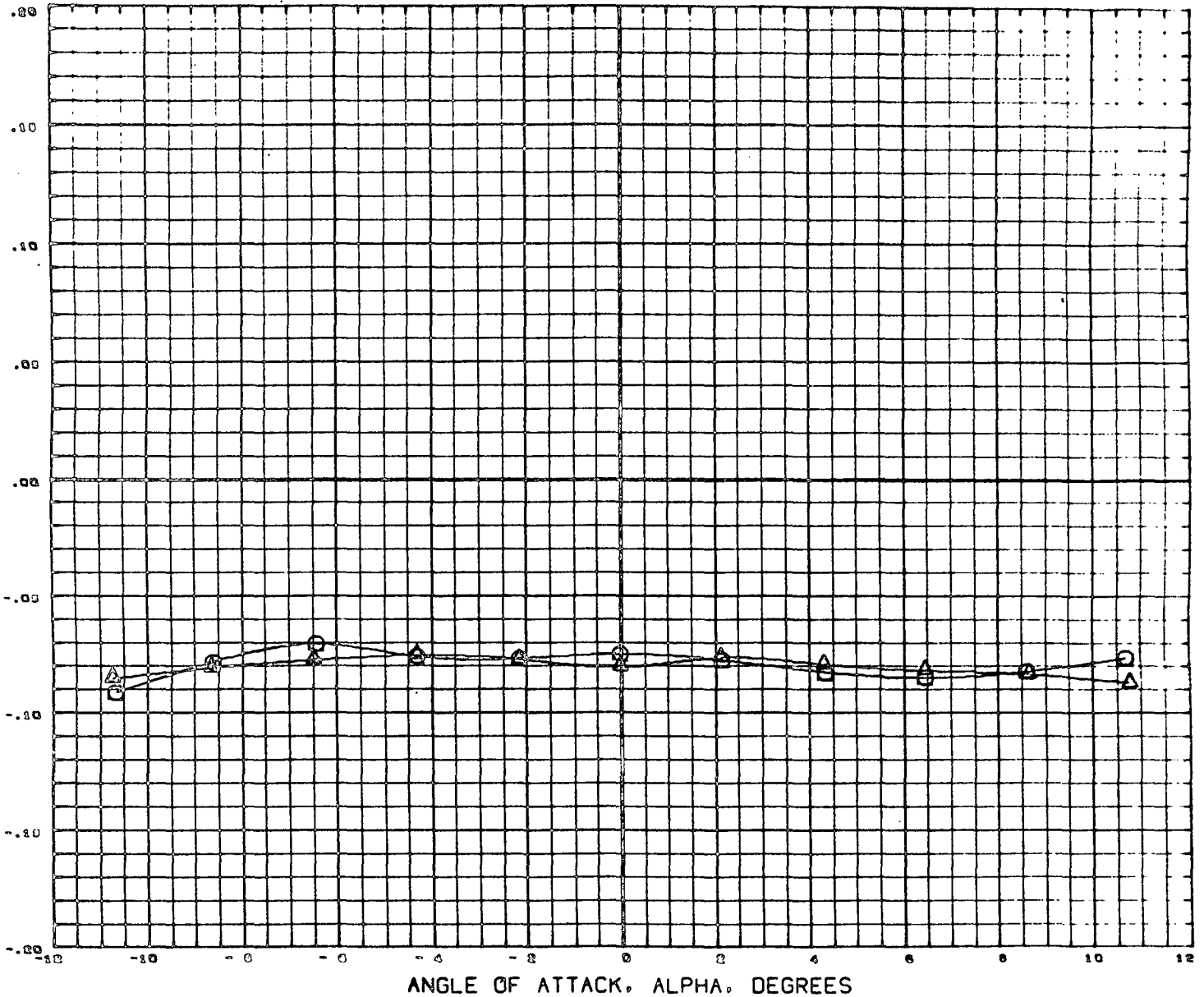
MACH

1.46

PAGE 319

COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



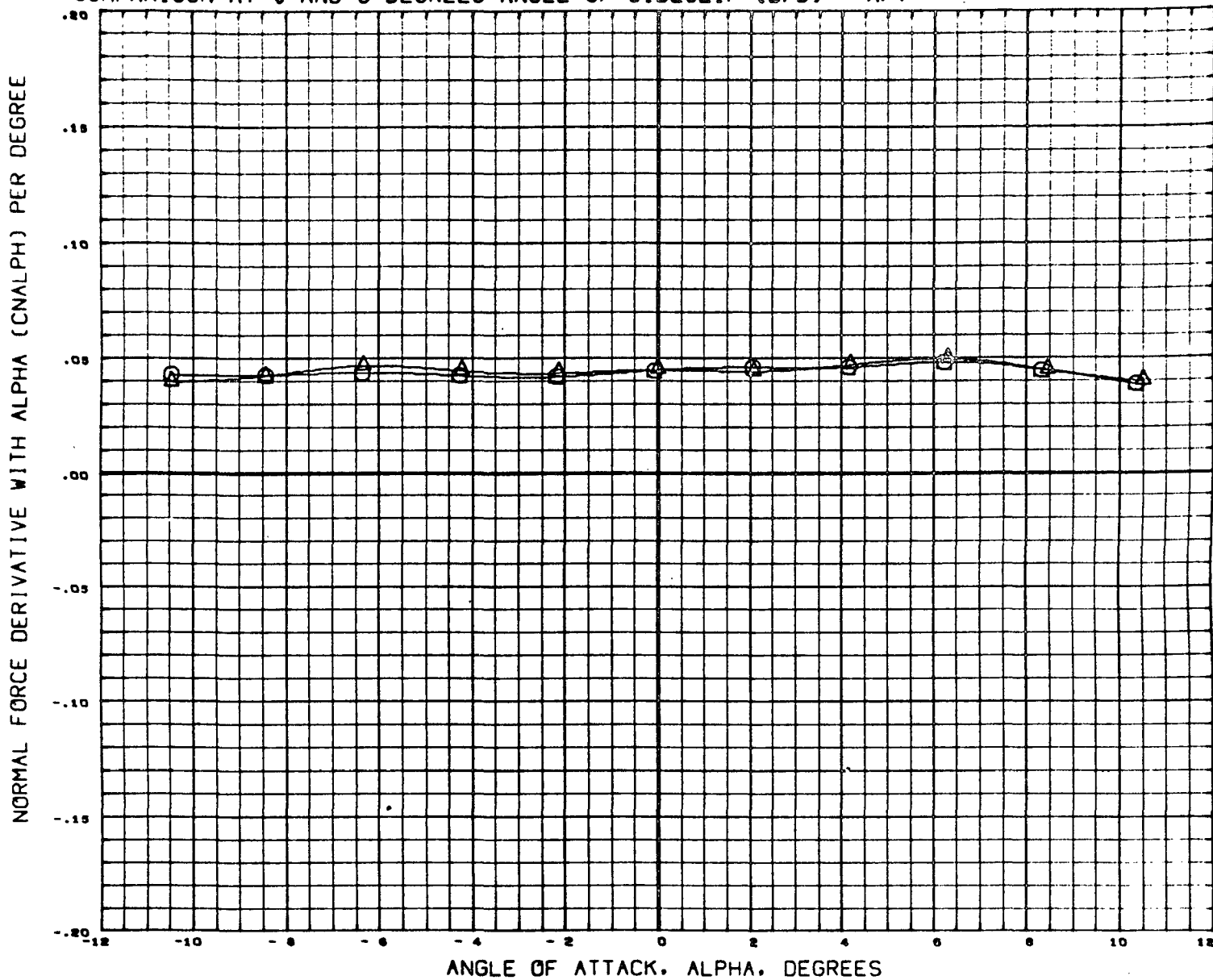
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13294A) M3PC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
 (13299A) M3PC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBITN	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	5.000	0.000	0.000	SREF	15.6560 30 IN
0.000	5.000	6.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



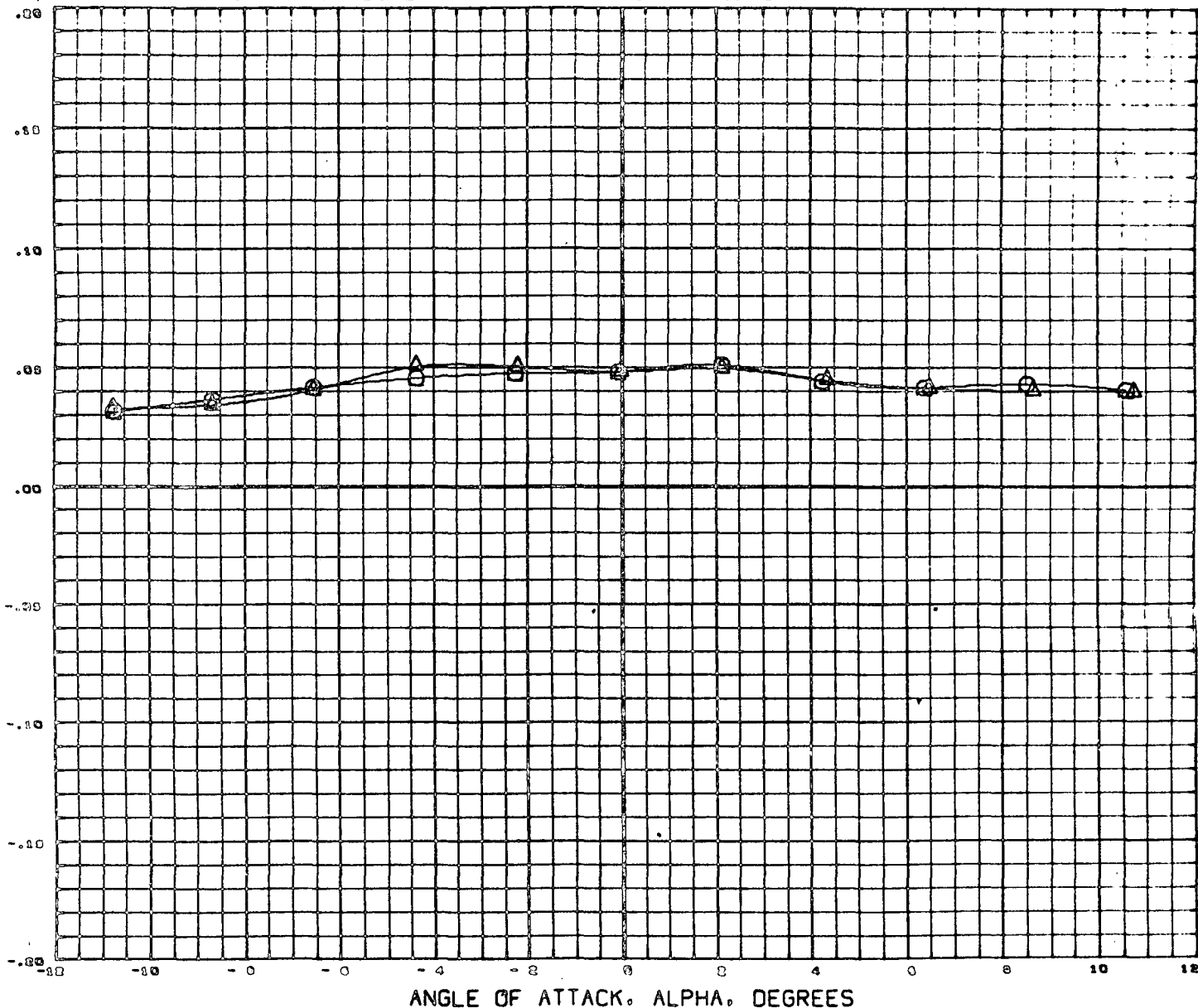
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(13254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	5.000	0.000	0.000	SREF	15.6560 50 IN
(13255A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	5.000	6.000	0.000	LREF	3.0990 INCHES
						BREF	0.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13294A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B9W17V17
(13295A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B9W17V17

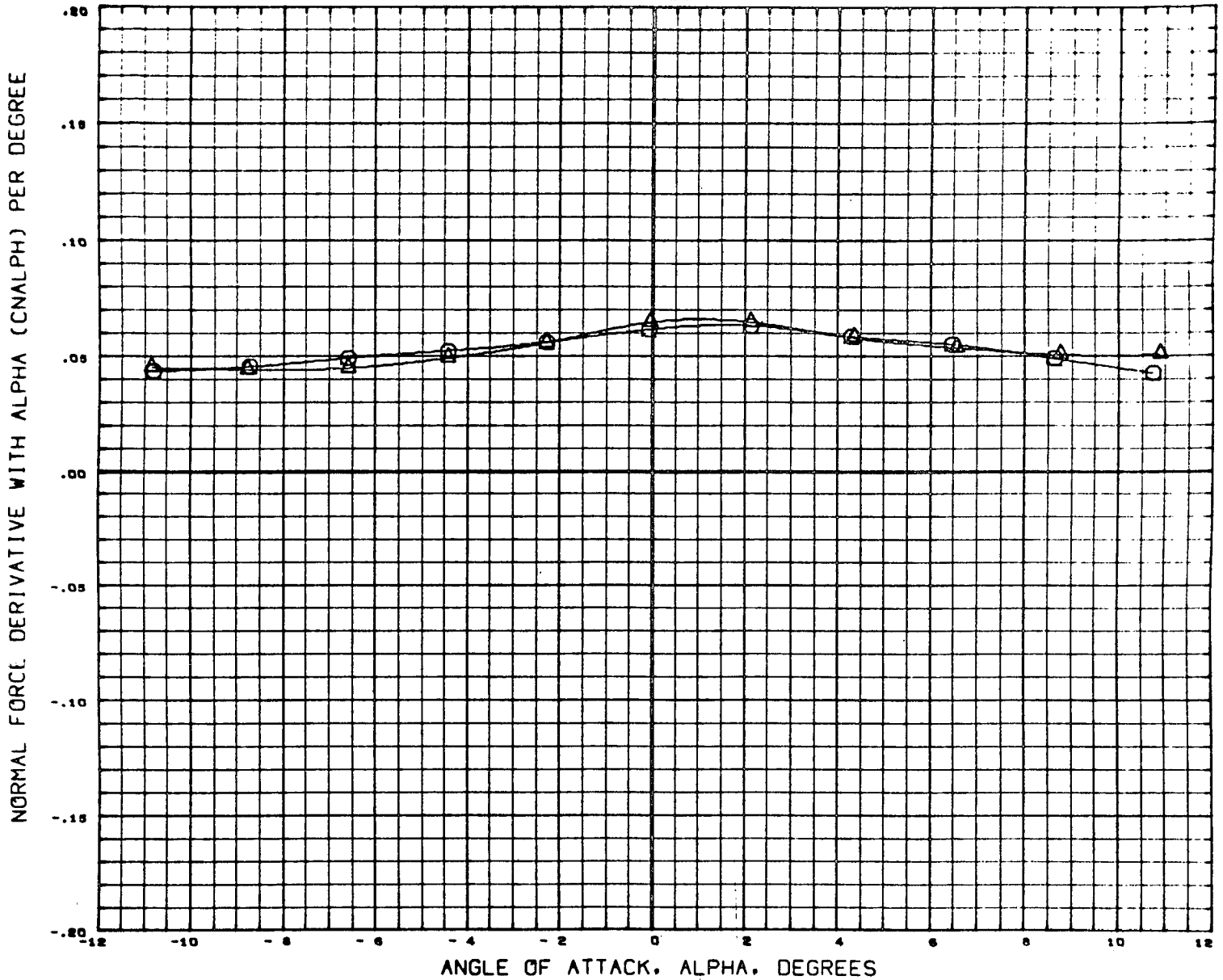
ORBINC	POSITN	BETA	ZLVATR
0.000	9.000	0.000	0.000
0.000	9.000	6.000	0.000

REFERENCE INFORMATION		
SREF	19.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH .90

PAGE 322

COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13254A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17
(13255A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17

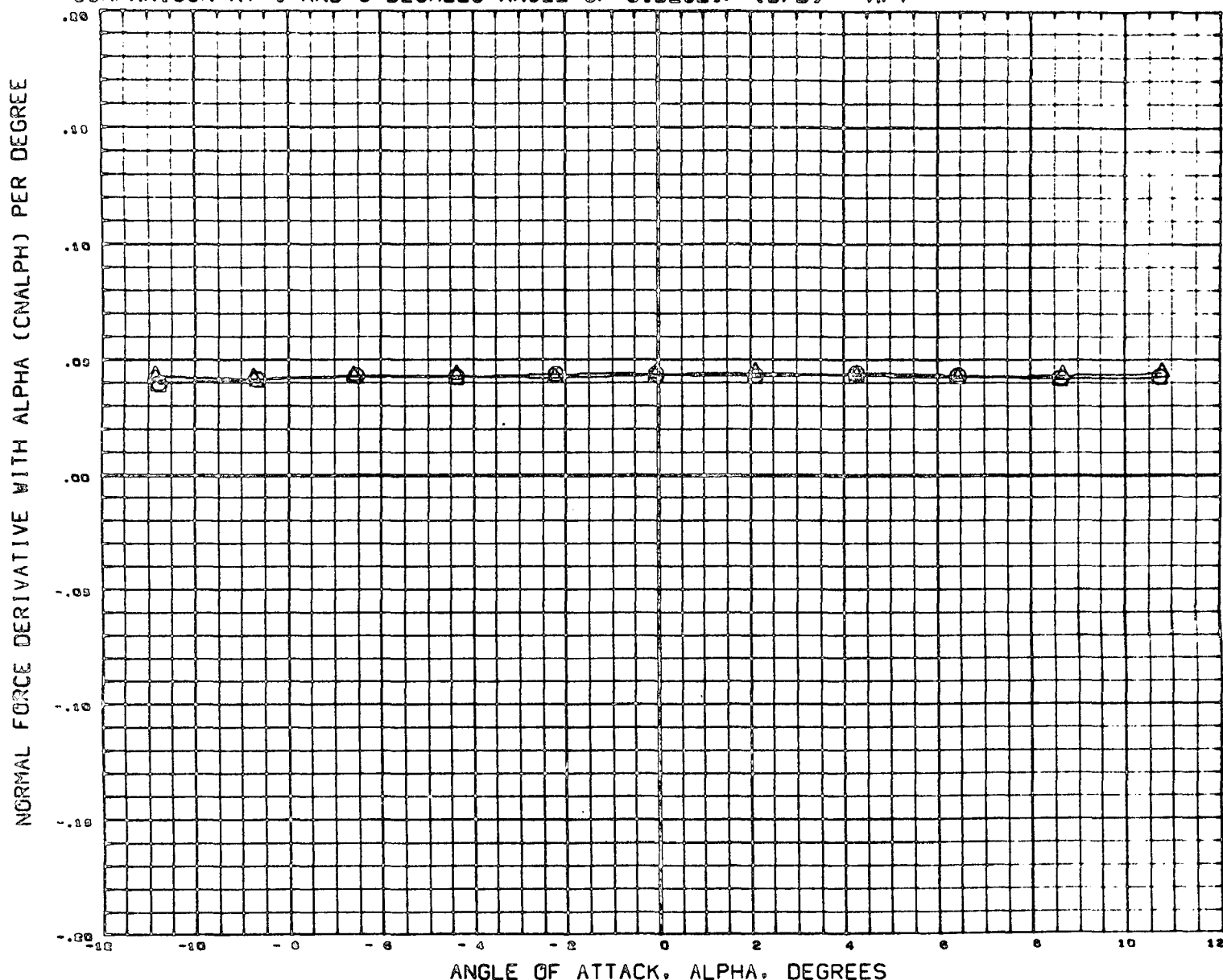
ORBINC	POSITN	BETA	ELVATR
0.000	5.000	0.000	0.000
0.000	5.000	6.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.10

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13294A)	MSFC400 NR/GD LAUNCH 820C4BW14V8+89W17V17
(13299A)	MSFC400 NR/GD LAUNCH 820C4BW14V8+89W17V17



ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	0.000	0.000	0.000	SREF	19.8960 SQ IN
0.000	5.000	0.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.46

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



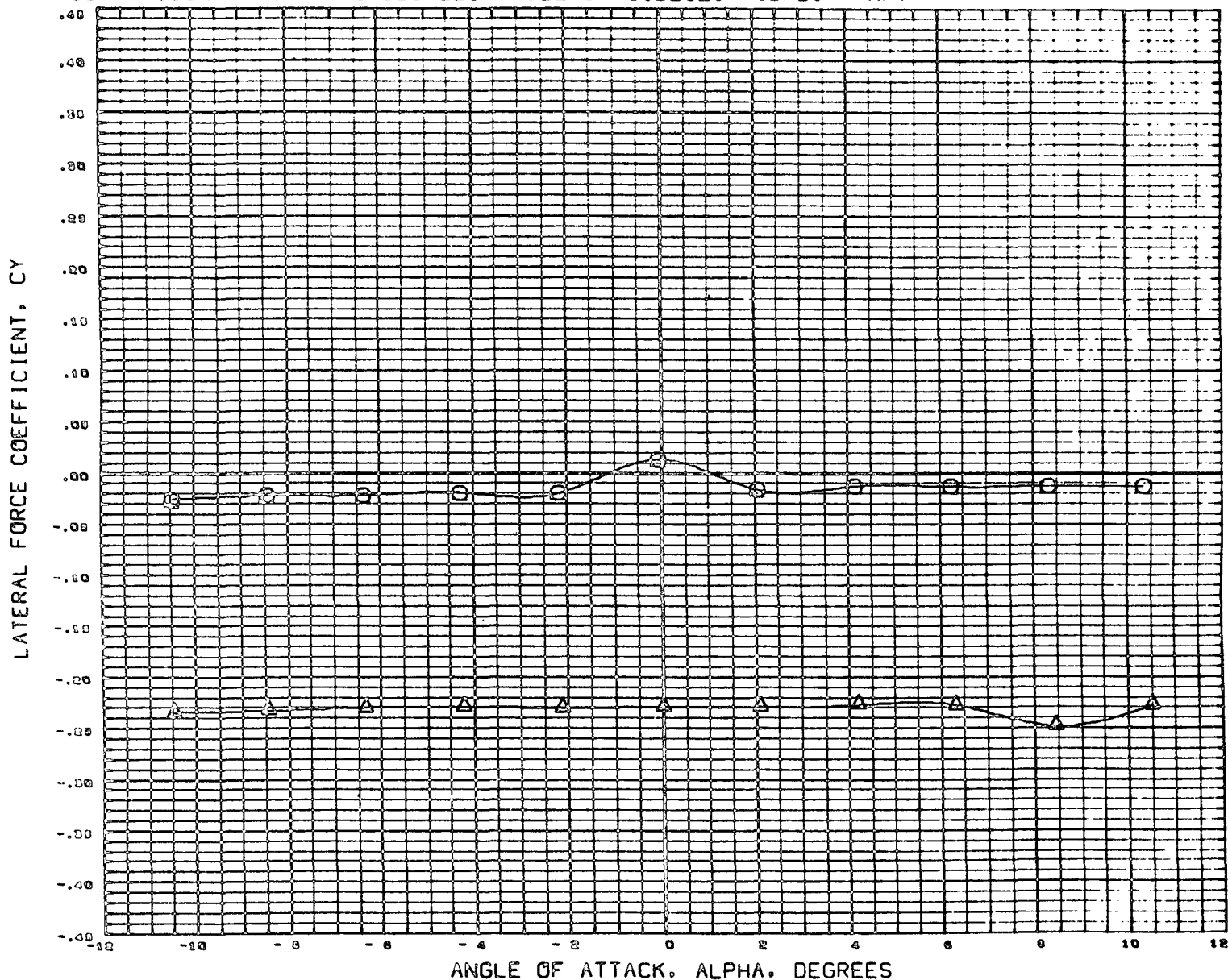
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13254A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(13255A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
0.000	5.000	0.000	0.000	SREF	15.6560	50 IN
0.000	5.000	6.000	0.000	LREF	3.0930	INCHES
				BREF	6.0990	INCHES
				XMRP	0.0000	
				YMRP	0.0000	
				ZMRP	0.0000	
				SCALE	0.0035	SCALE

MACH 1.96

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

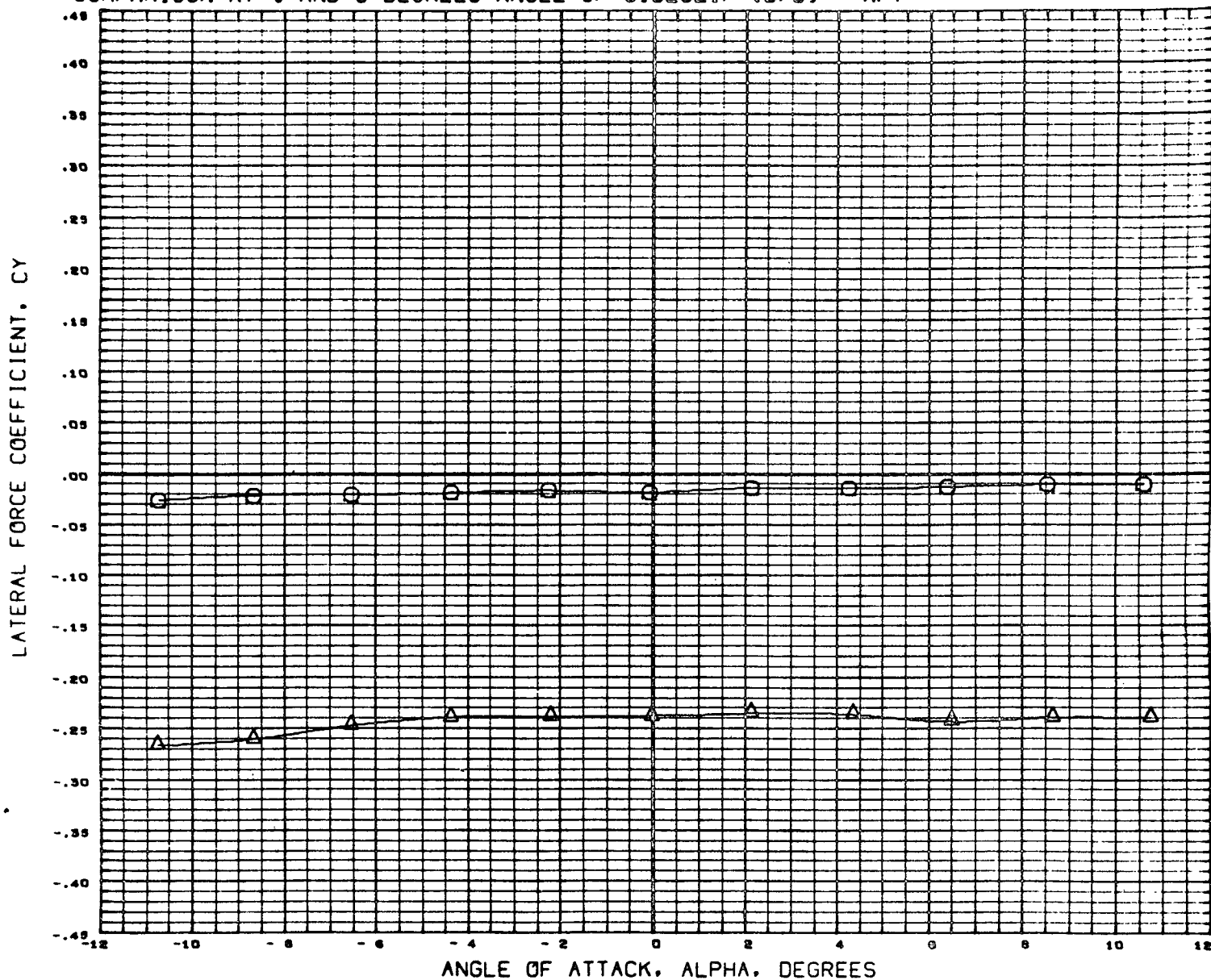


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBIT	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(A3294A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17	0.000	9.000	0.000	0.000	SREF	15.6560 SQ IN
(A3299A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17	0.000	9.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

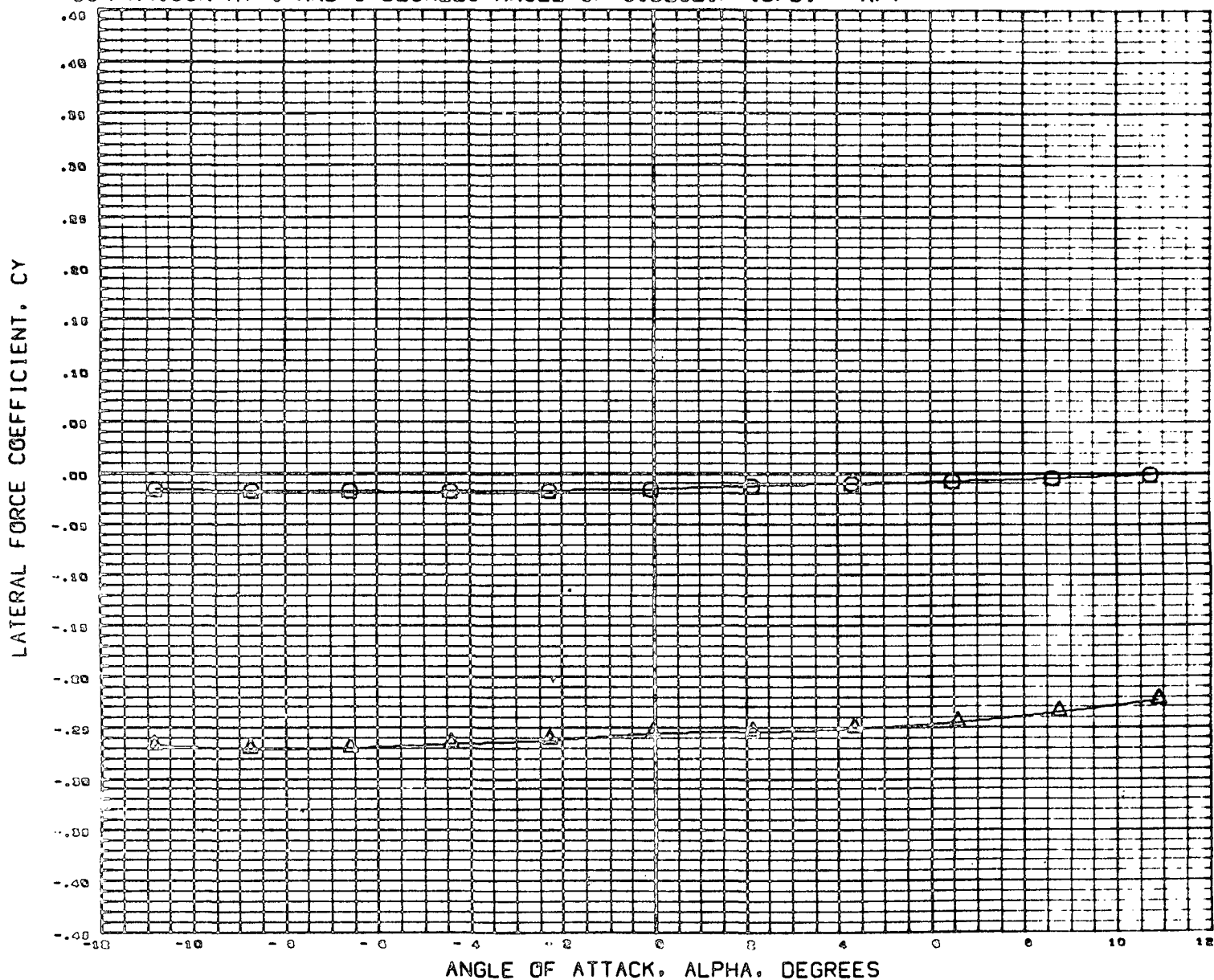


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBITAL	POSITION	BETA	ELVATR	REFERENCE INFORMATION	
(A3254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	5.000	0.000	0.000	SREP	15.6560 SQ IN
(A3255A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17	0.000	5.000	6.000	0.000	LREP	3.0990 INCHES
						BREP	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

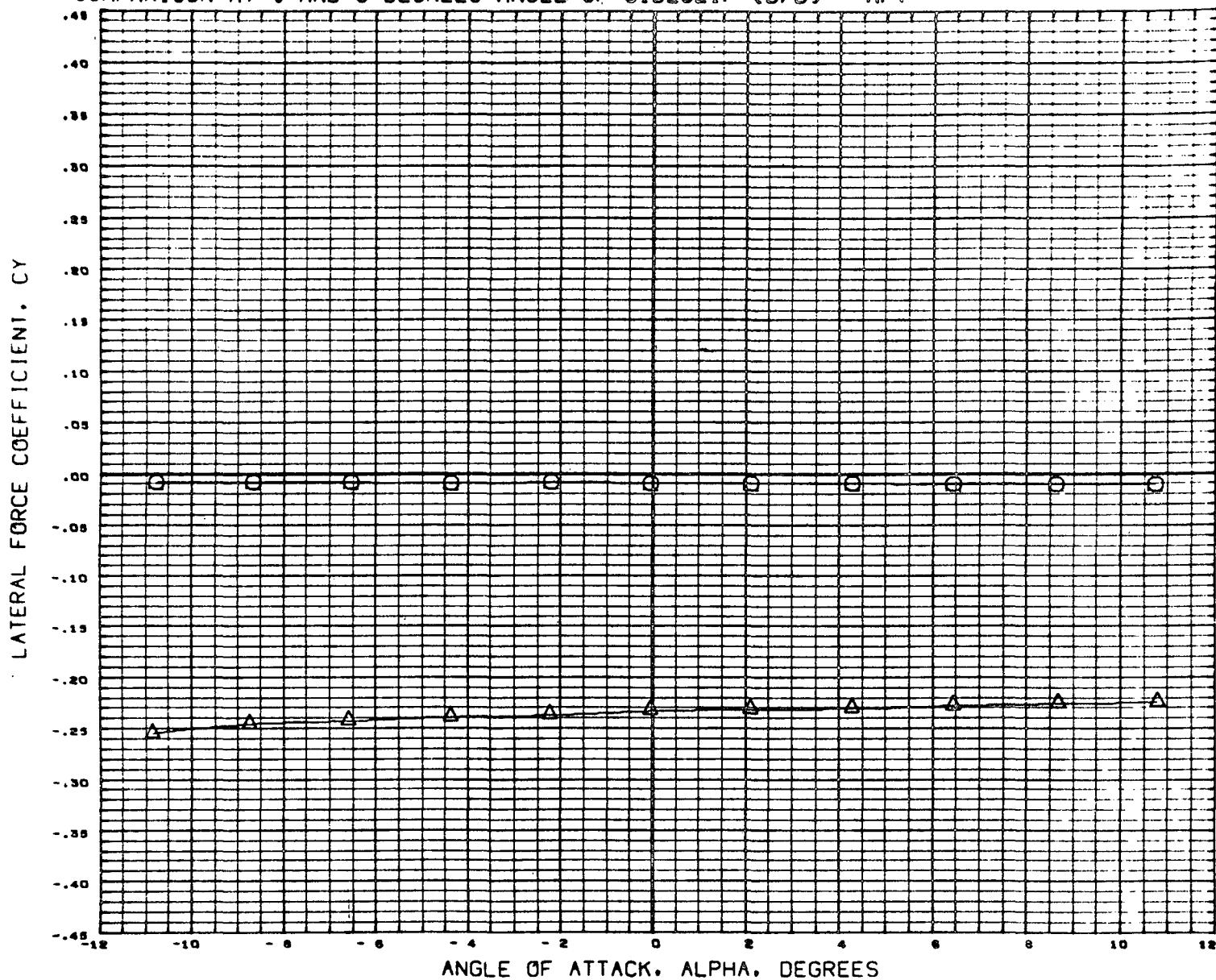


DATA BZT SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(A3294A)	M3PC490 NR/60 LAUNCH B20C48W14V8+B9W17V17	0.000	9.000	0.000	0.000	SREF	15.6560 SQ IN
(A3295A)	M3PC490 NR/60 LAUNCH B20C48W14V8+B9W17V17	0.000	9.000	0.000	0.000	LREF	3.0990 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH 1.10

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



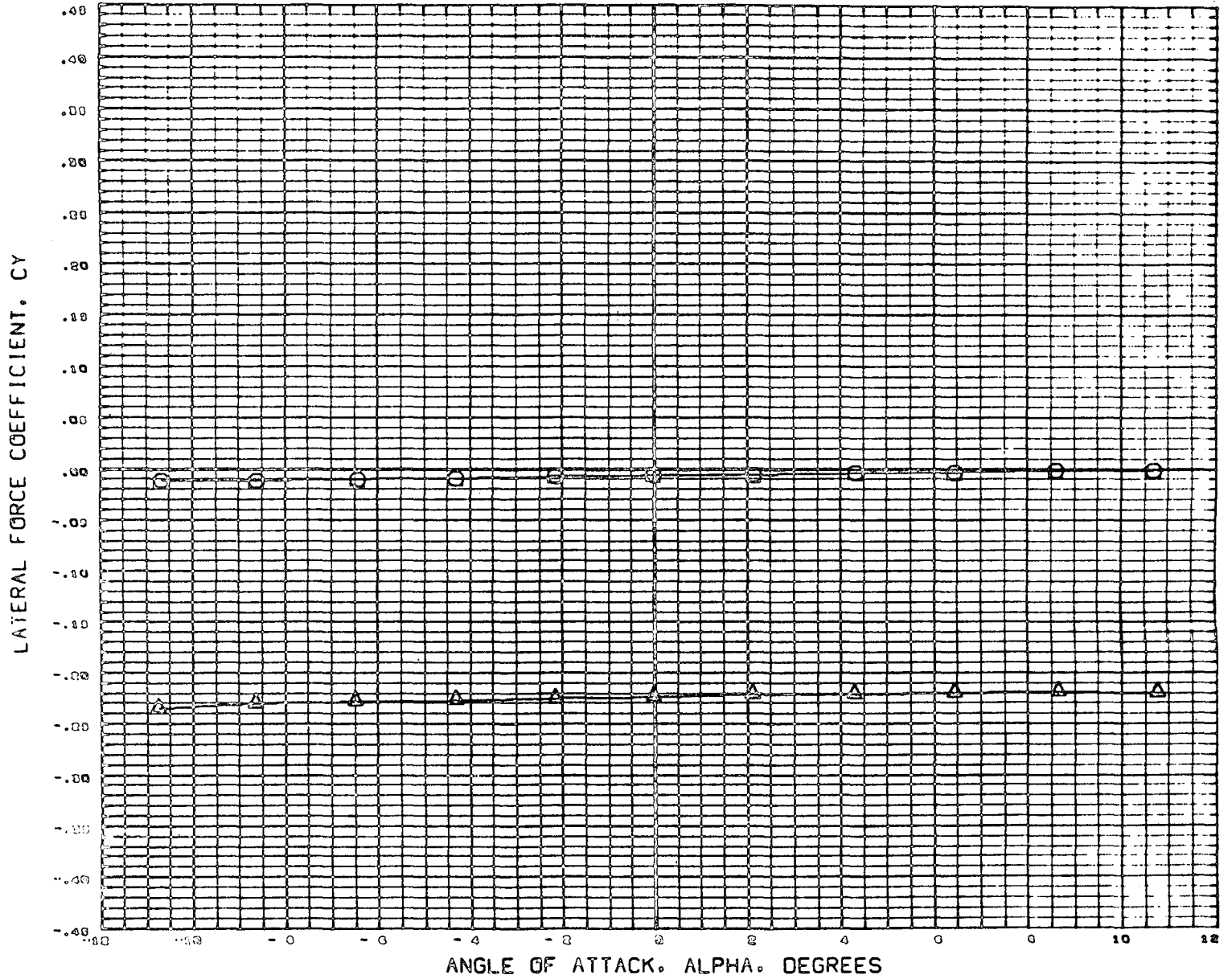
DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A3254A) MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17
 (A3255A) MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	5.000	0.000	0.000	SREF	15.6560 SQ IN
0.000	5.000	6.000	0.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.46

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A3294A)	Q M5PC490 NR/GD LAUNCH B20C48W14V8+B5W17V17
(A3299A)	A M5PC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

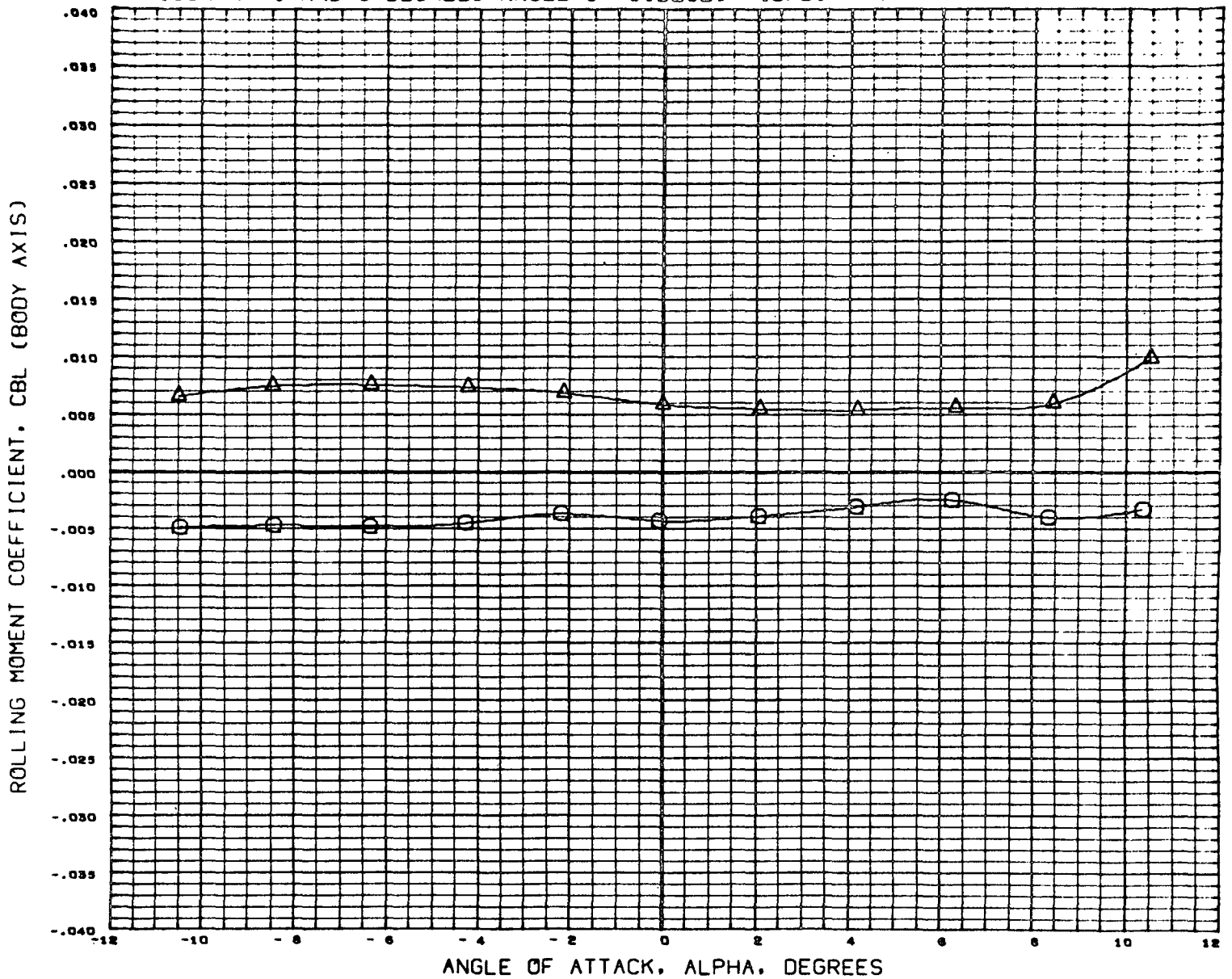
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	0.000	0.000	0.000	SREP	15.6560 SQ IN
0.000	0.000	0.000	0.000	LREF	3.0950 INCHES
				GREP	0.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH

1.96

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



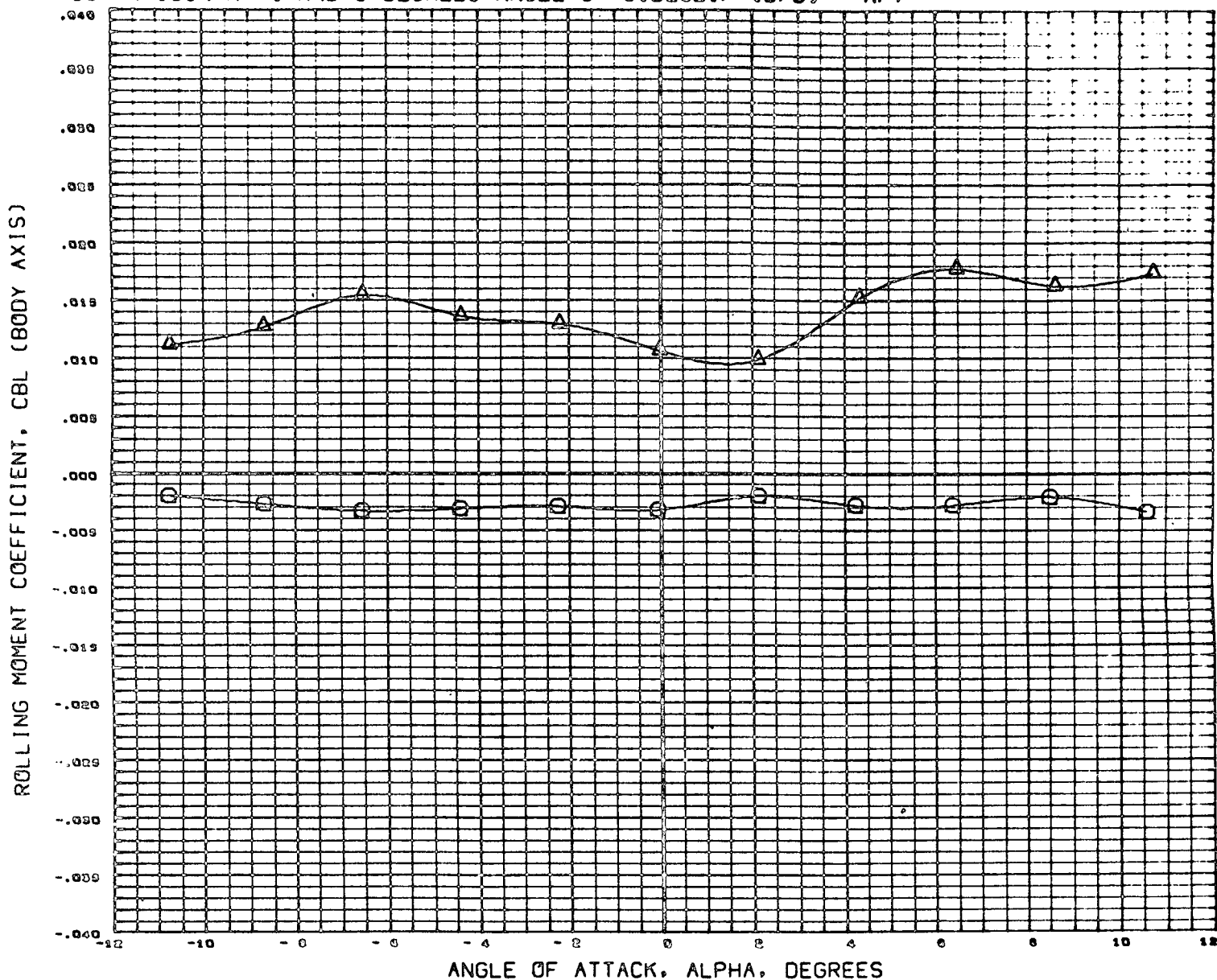
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A3254A) ○	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(A3255A) △	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	5.000	0.000	0.000	SREF 15.6560 50 IN
0.000	5.000	6.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XHRP 0.0000
				YHRP 0.0000
				ZHRP 0.0000
				SCALE 0.0035 SCALE

MACH .60

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A3294A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (A3295A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

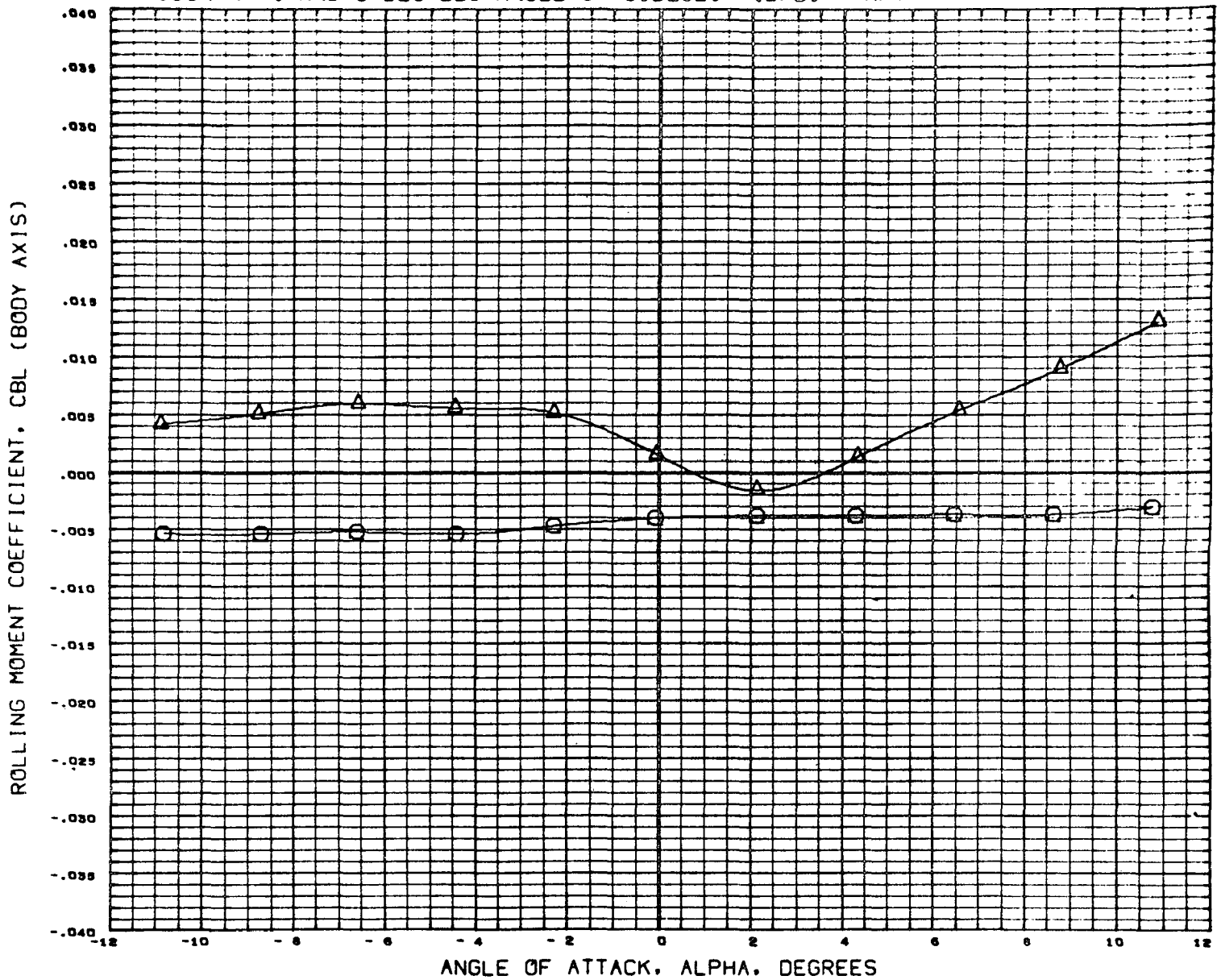
ORBINC POSITN BETA ELVATR
 0.000 9.000 0.000 0.000
 0.000 9.000 0.000 0.000

REFERENCE INFORMATION
 SREF 15.6560 30 IN
 LREF 3.0990 INCHES
 BREF 0.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH .90

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A3254A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17
(A3255A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17

ORBINC	POSITN	BETA	ELVATR
0.000	5.000	0.000	0.000
0.000	5.000	6.000	0.000

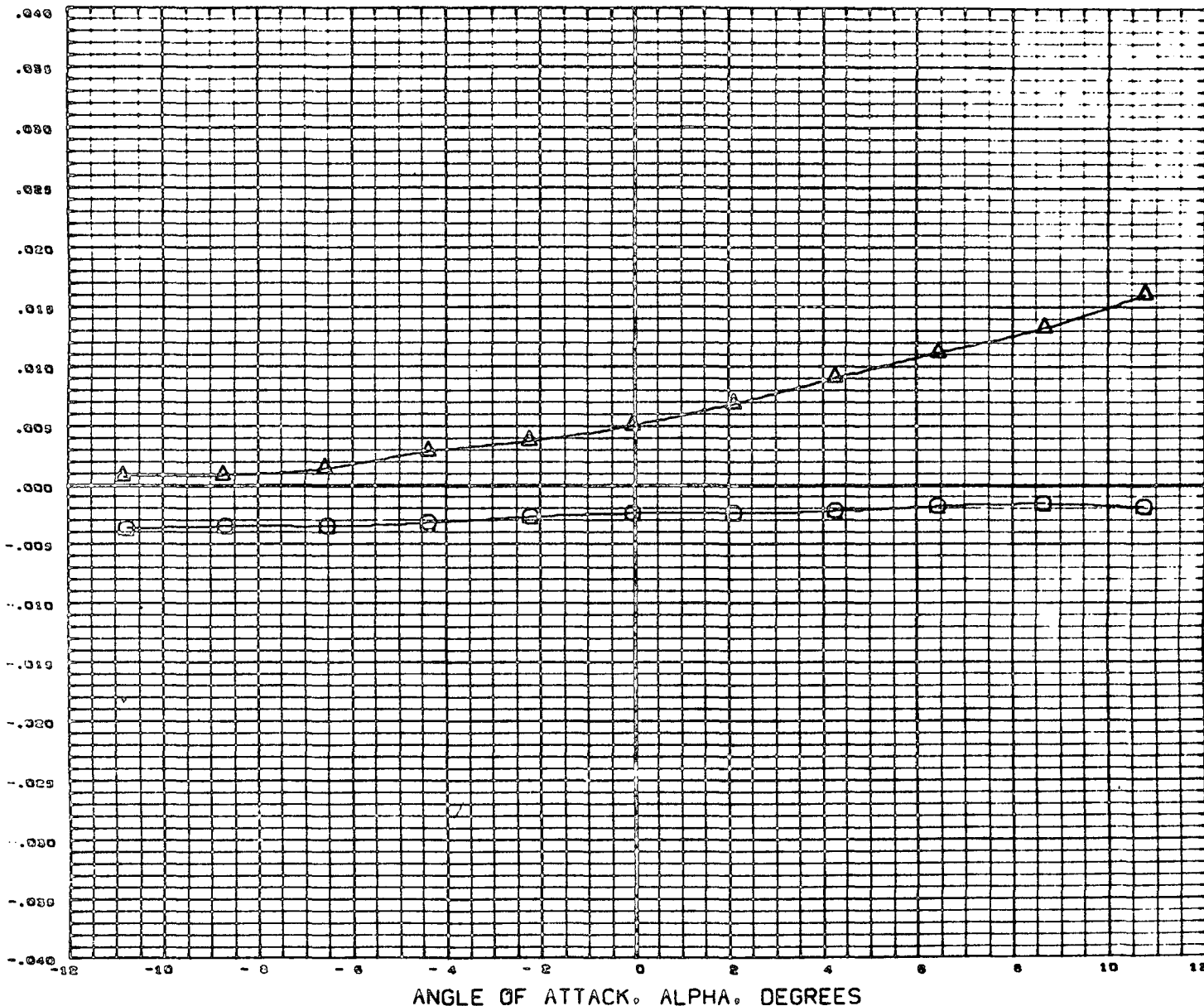
REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 1.10

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

ROLLING MOMENT COEFFICIENT, CBL (BODY AXIS)



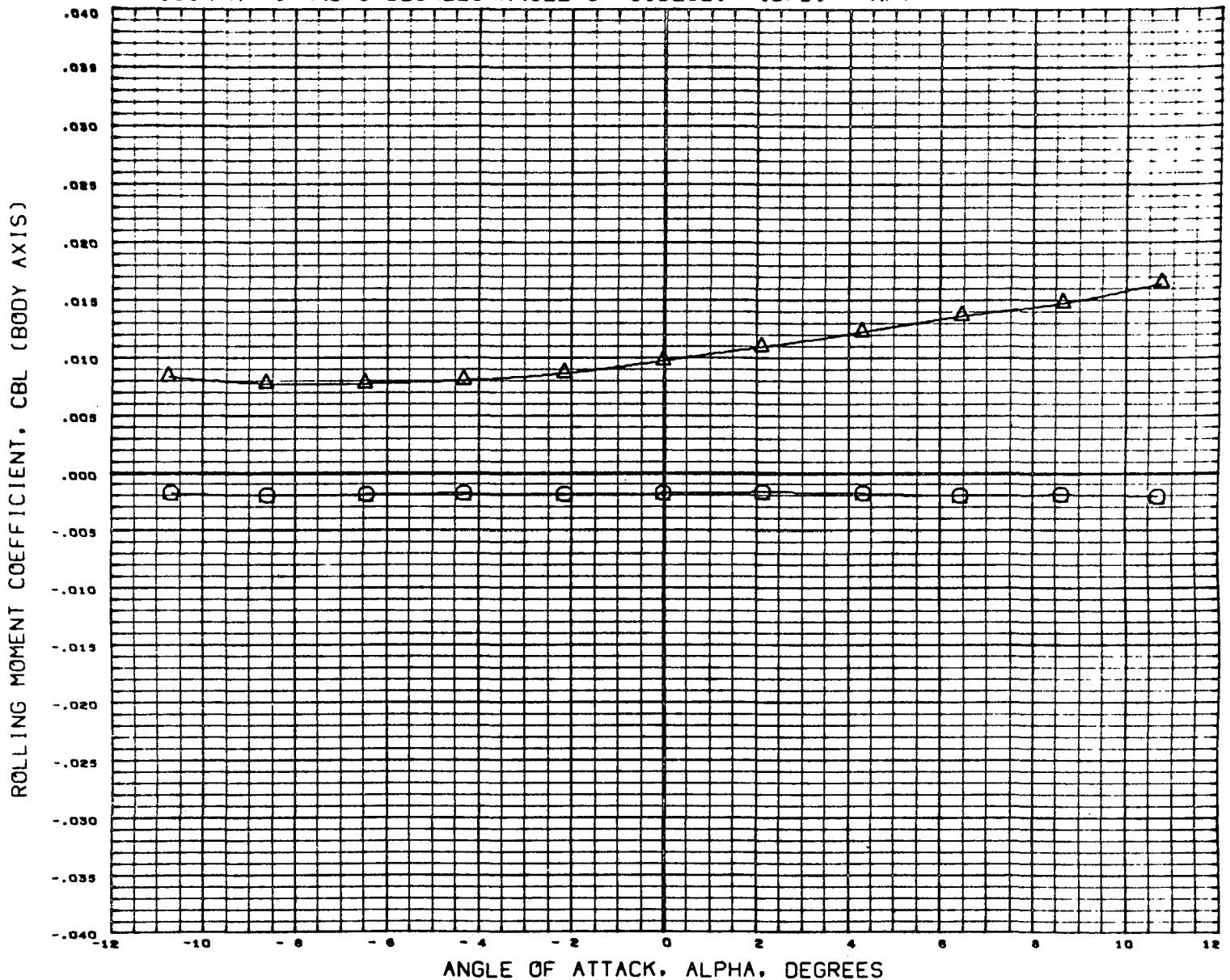
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A3254A) O	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(A3255A) Δ	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	5.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	0.000	0.000	LREF 3.0950 INCHES
				BREF 8.0990 INCHES
				XMRF 0.0000
				YMRF 0.0000
				ZMRF 0.0000
				SCALE 0.0035 SCALE

MACH 1.46

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



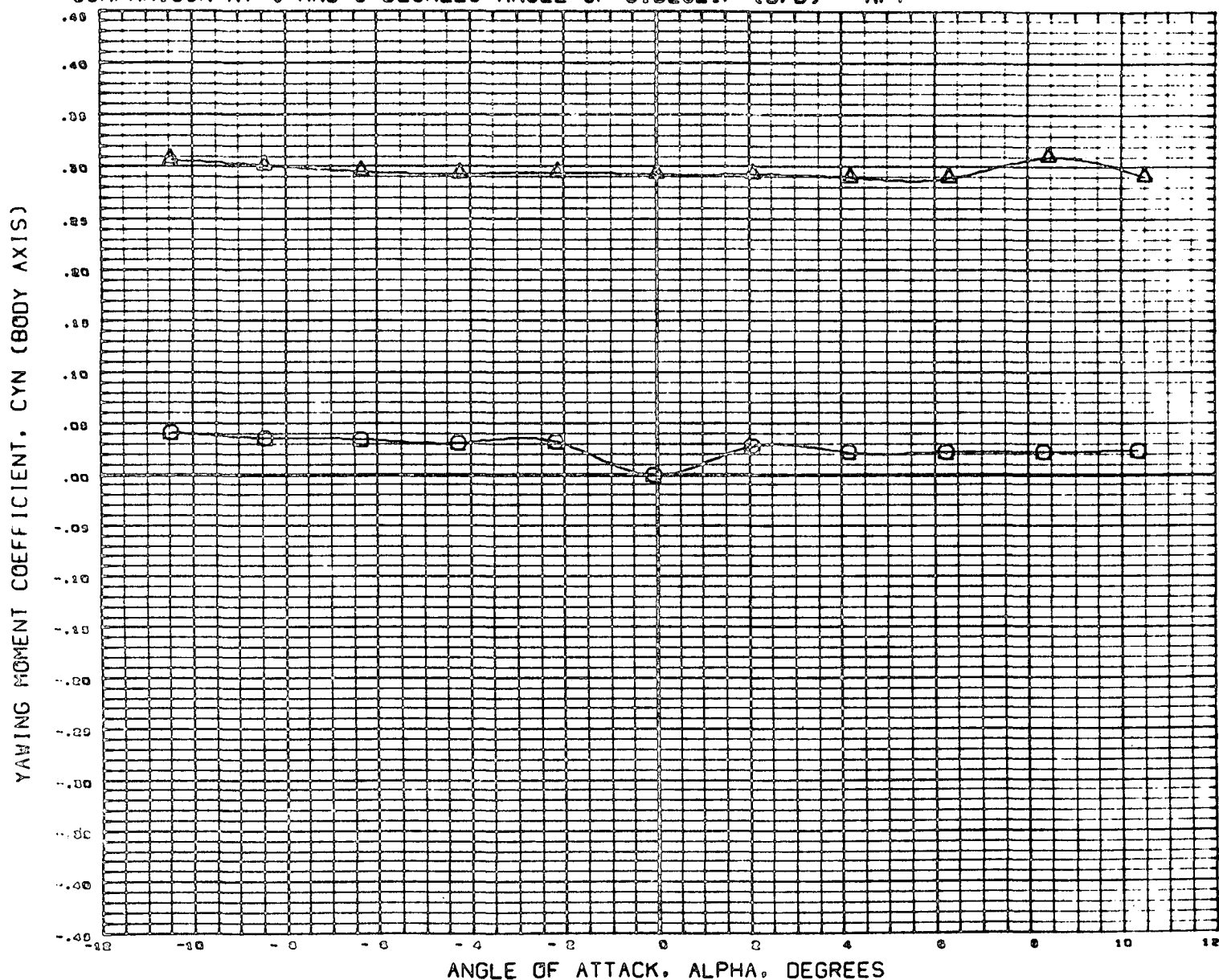
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(A3254A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17
(A3255A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	5.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	6.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.96

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



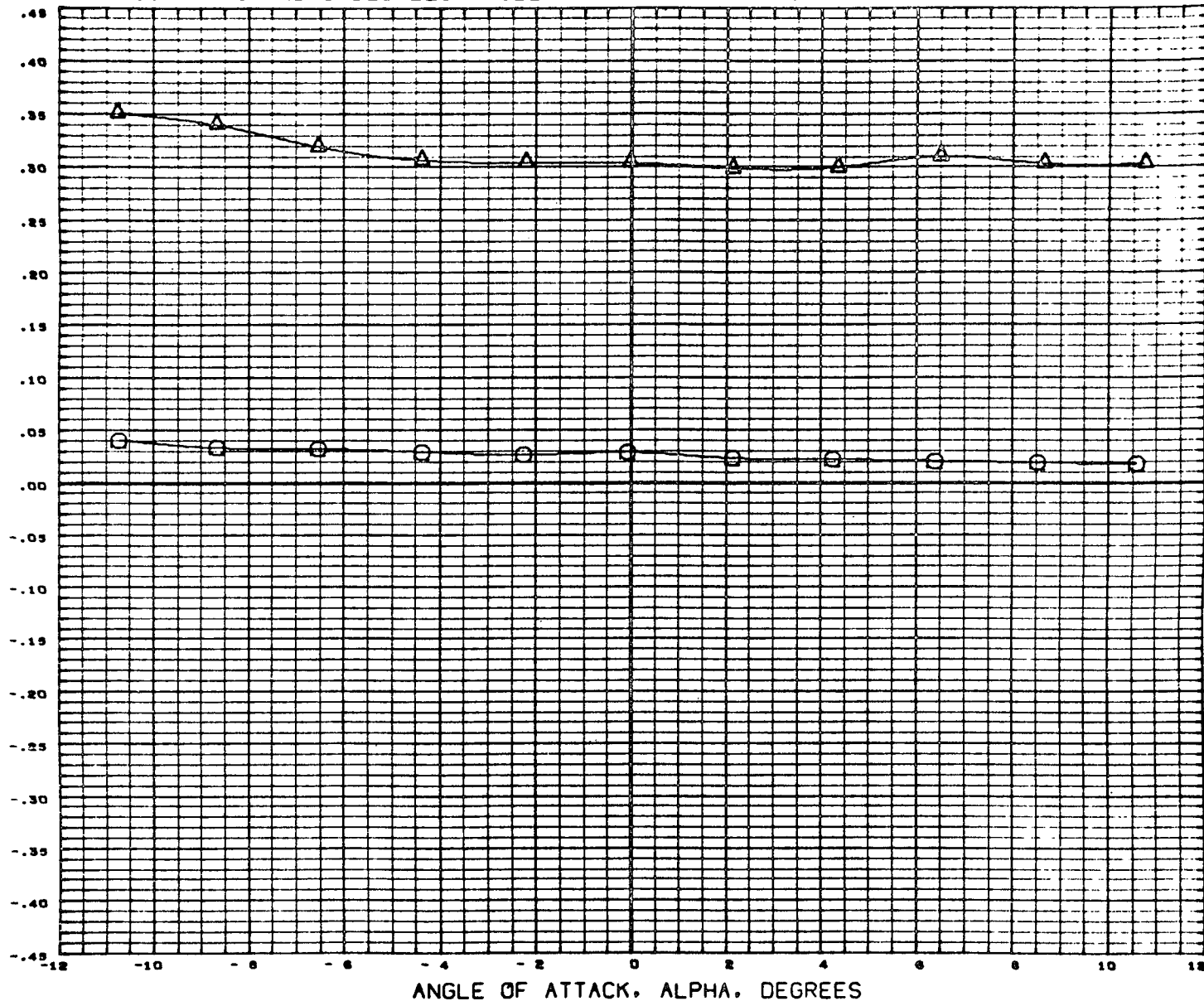
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORGINC	POBITN	BETA	ELVATR	REFERENCE INFORMATION	
(A3294A)	MSFC490 NR/CD LAUNCH 820C4BW14V8+BSW17V17	0.000	5.000	0.000	0.000	SREF	15.6560 50 IN
(A3299A)	MSFC490 NR/CD LAUNCH 820C4BW14V8+BSW17V17	0.000	9.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0039 SCALE



MACH .60

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



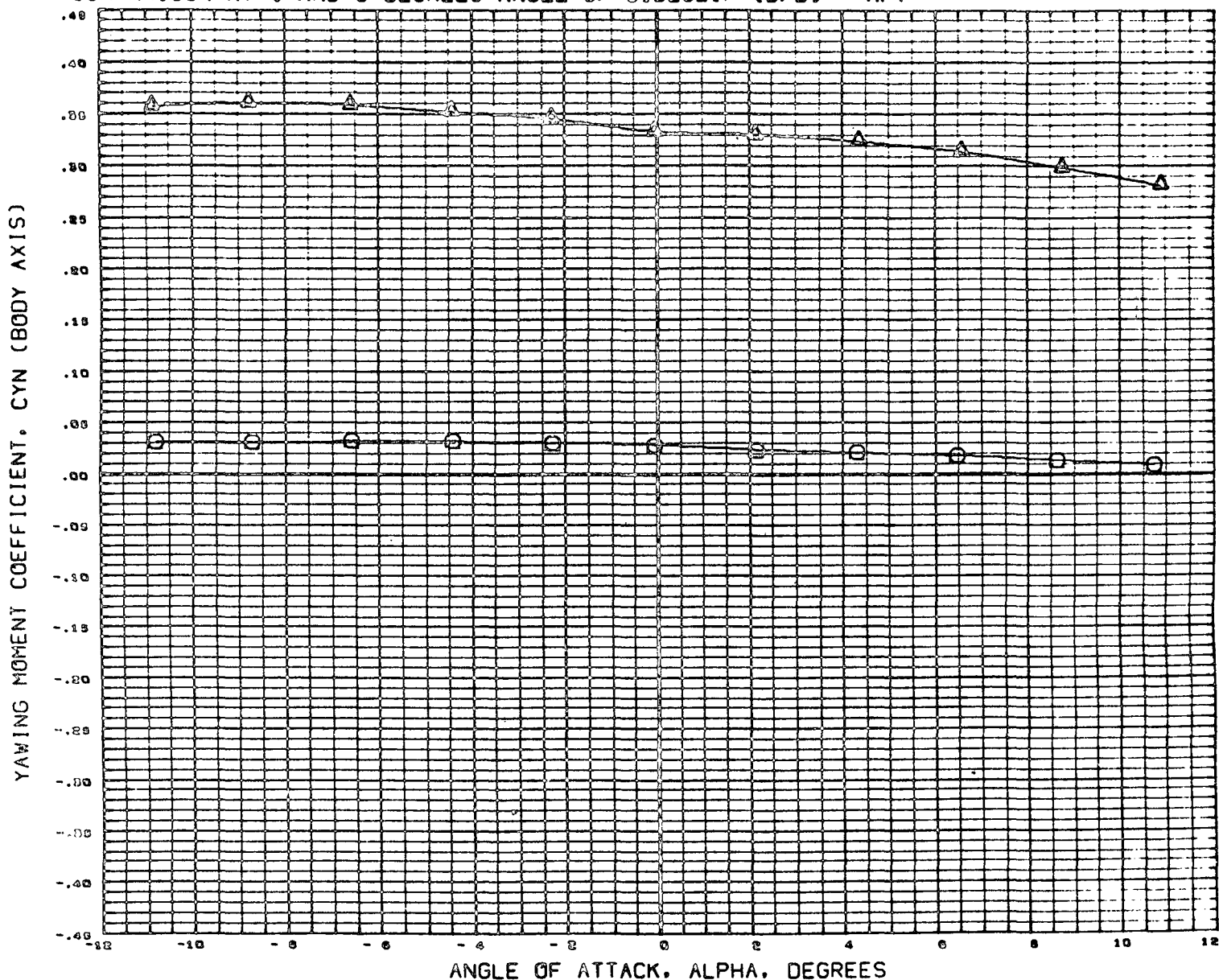
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A3254A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(A3255A) 	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	5.000	0.000	0.000	SREF	15.6560 SQ IN
0.000	5.000	6.000	0.000	LREF	3.0930 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH .90

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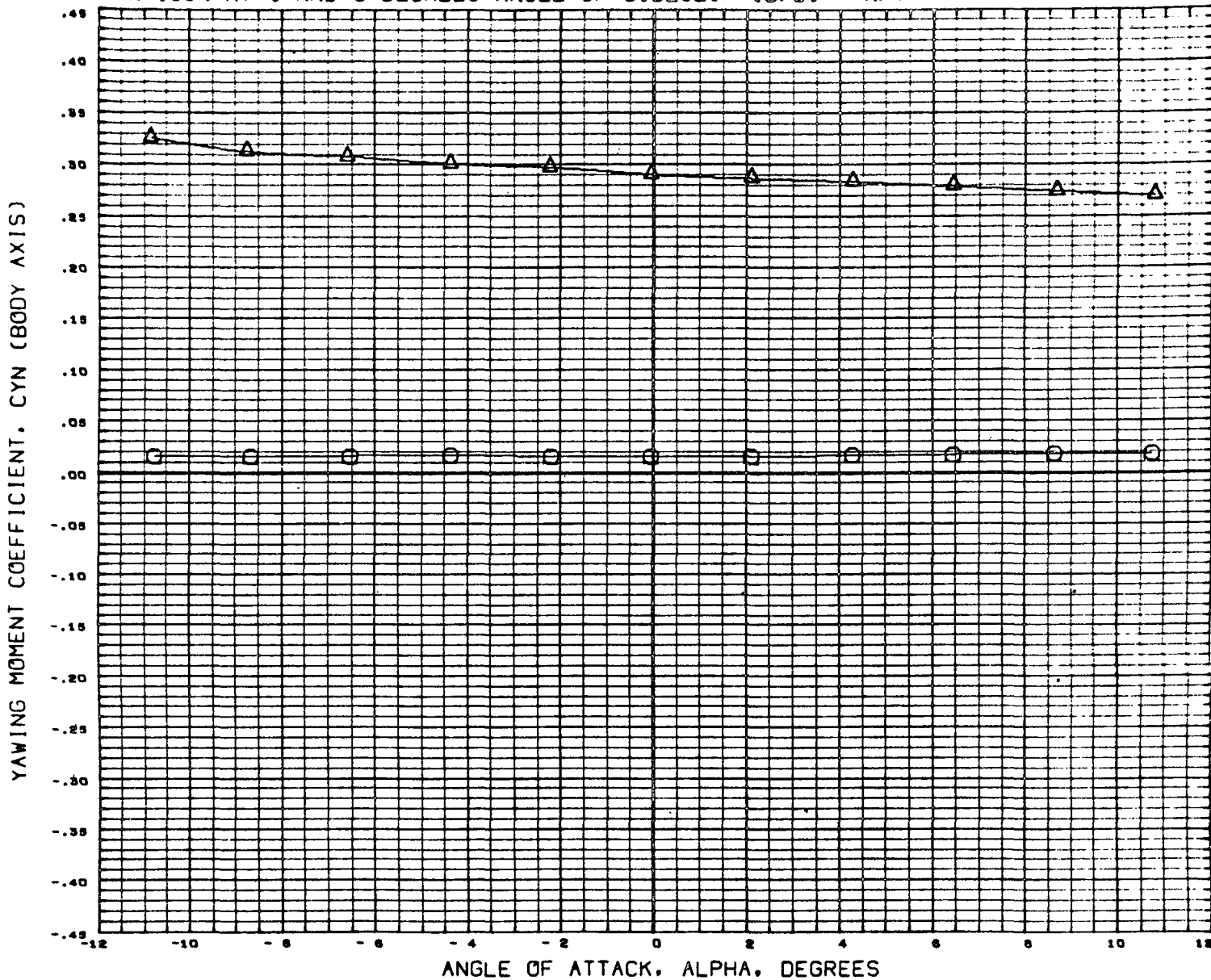
COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBITAL	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(A3254A)	MSPC490 NR/GD LAUNCH 820C48W14V8-B5W17V17	0.000	9.000	0.000	0.000	SREF	19.6580 SQ IN
(A3255A)	MSPC490 NR/GD LAUNCH 820C48W14V0-B5W17V17	0.000	9.000	0.000	0.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRF	0.0000
						YMRF	0.0000
						ZMRF	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A3234A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(A3235A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

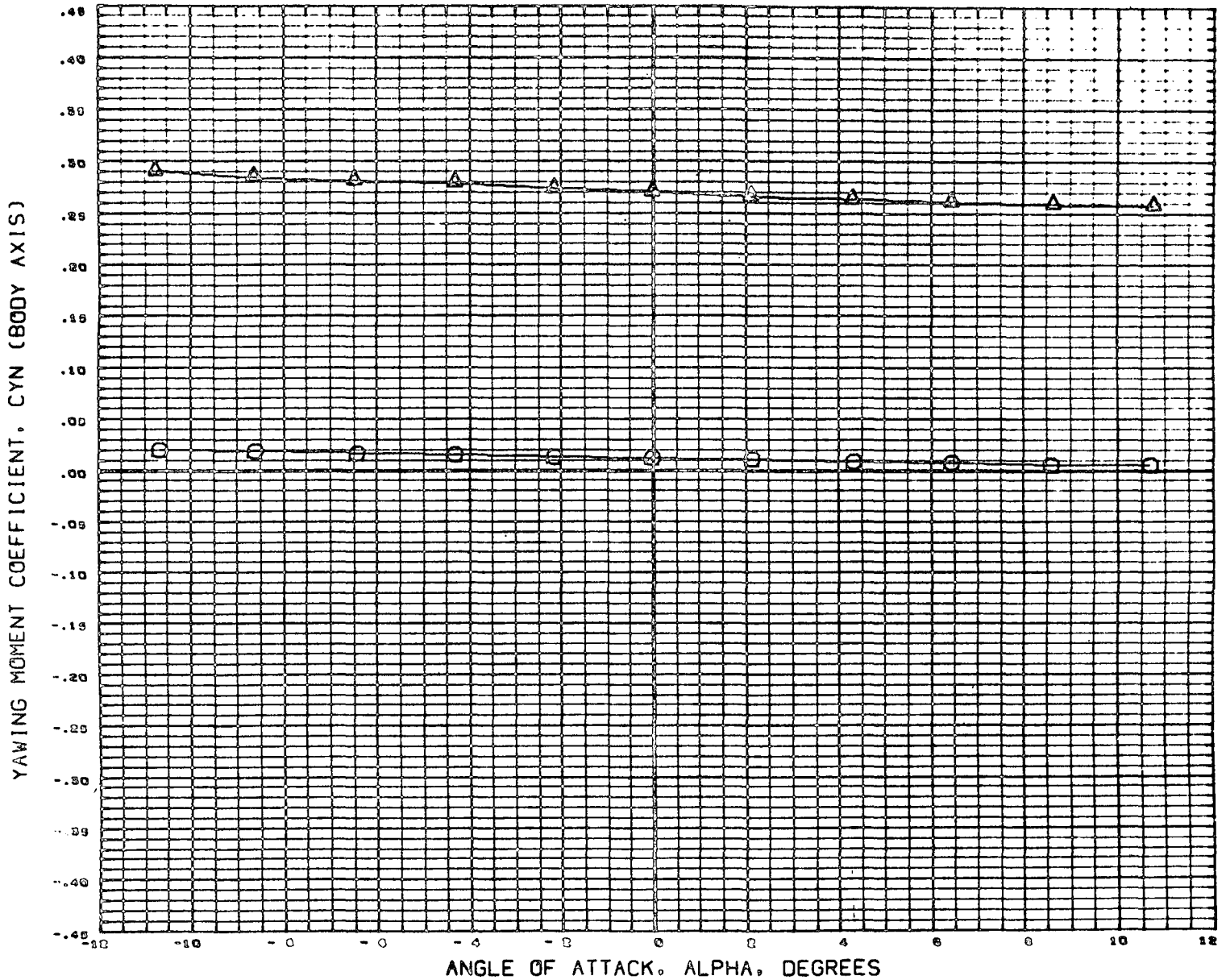
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	5.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	5.000	6.000	0.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0033 SCALE



MACH 1.46

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COMPARISON AT 0 AND 6 DEGREES ANGLE OF SIDESLIP (B/B) - AFT



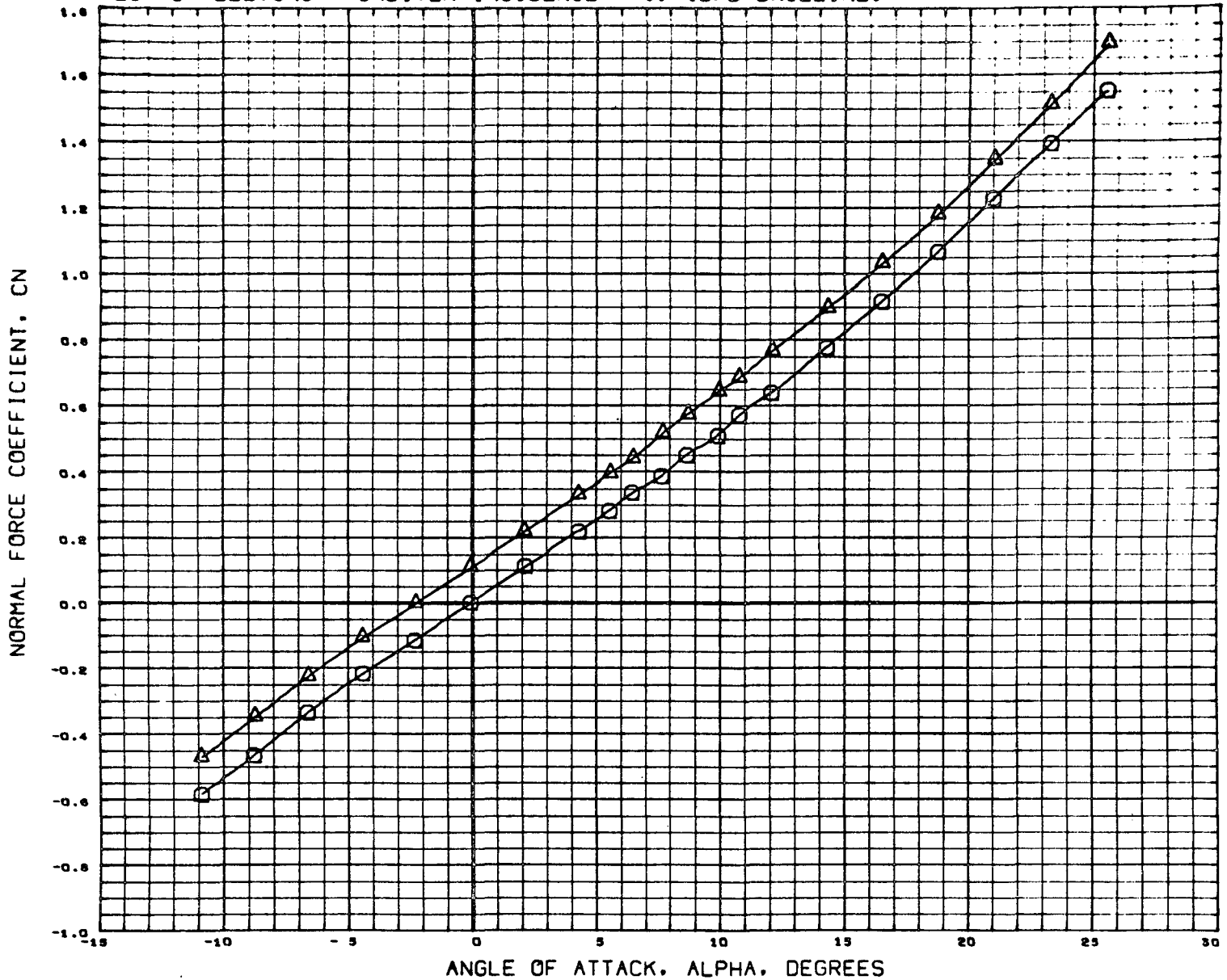
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A3254A) 	MSPC490 NR/60 LAUNCH B20C4BW14V8+85W17V17
(A3255A) 	MSPC490 NR/60 LAUNCH B20C4BW14V8+85W17V17

ORBIT	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	9.000	0.000	0.000	SREF	15.6360 SQ IN
0.000	9.000	0.000	0.000	LREF	3.0990 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

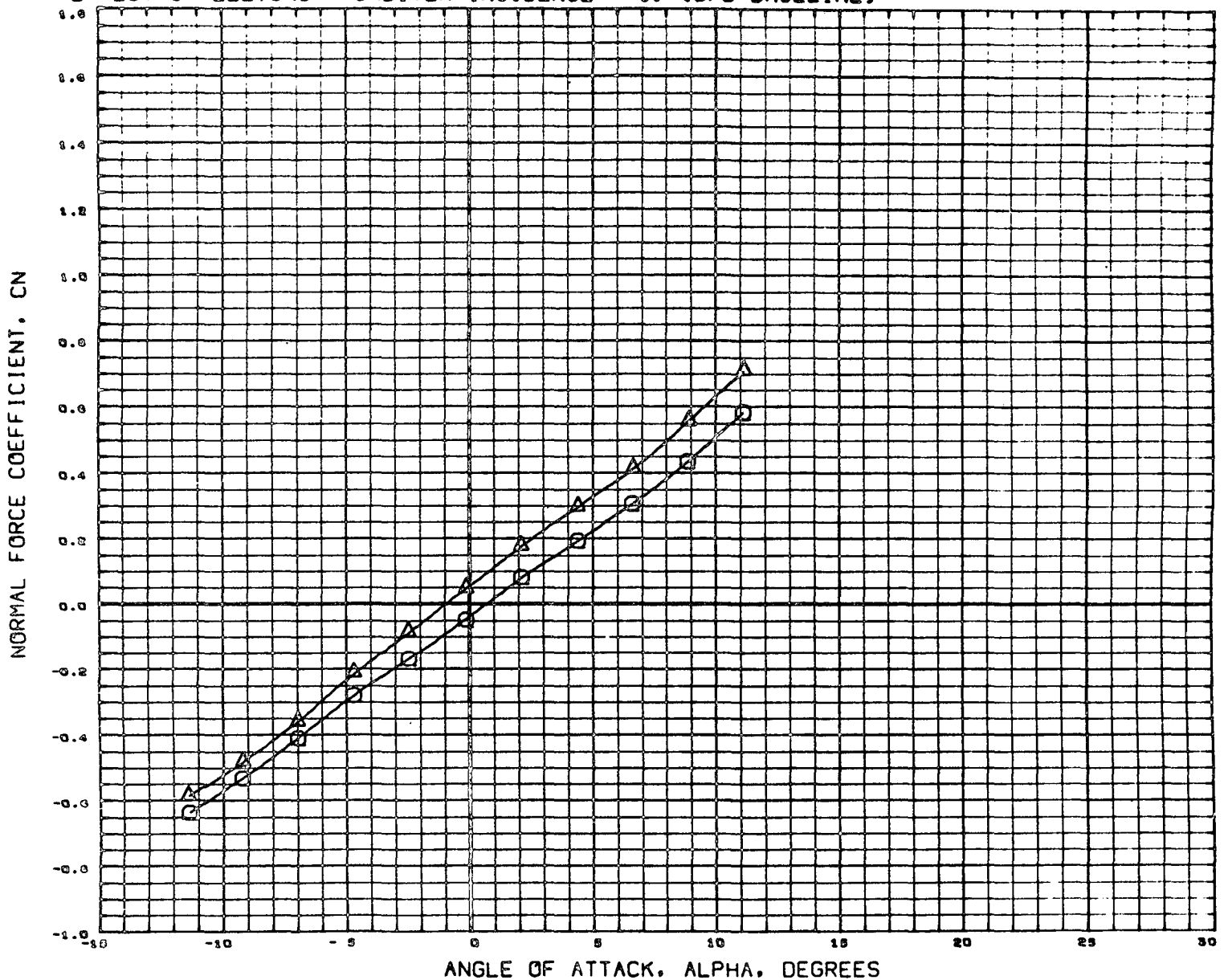


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H32508)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	0.000	4.000	0.000	0.000	SREF	13.6560 SQ IN
(H32513)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

PAGE 341

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

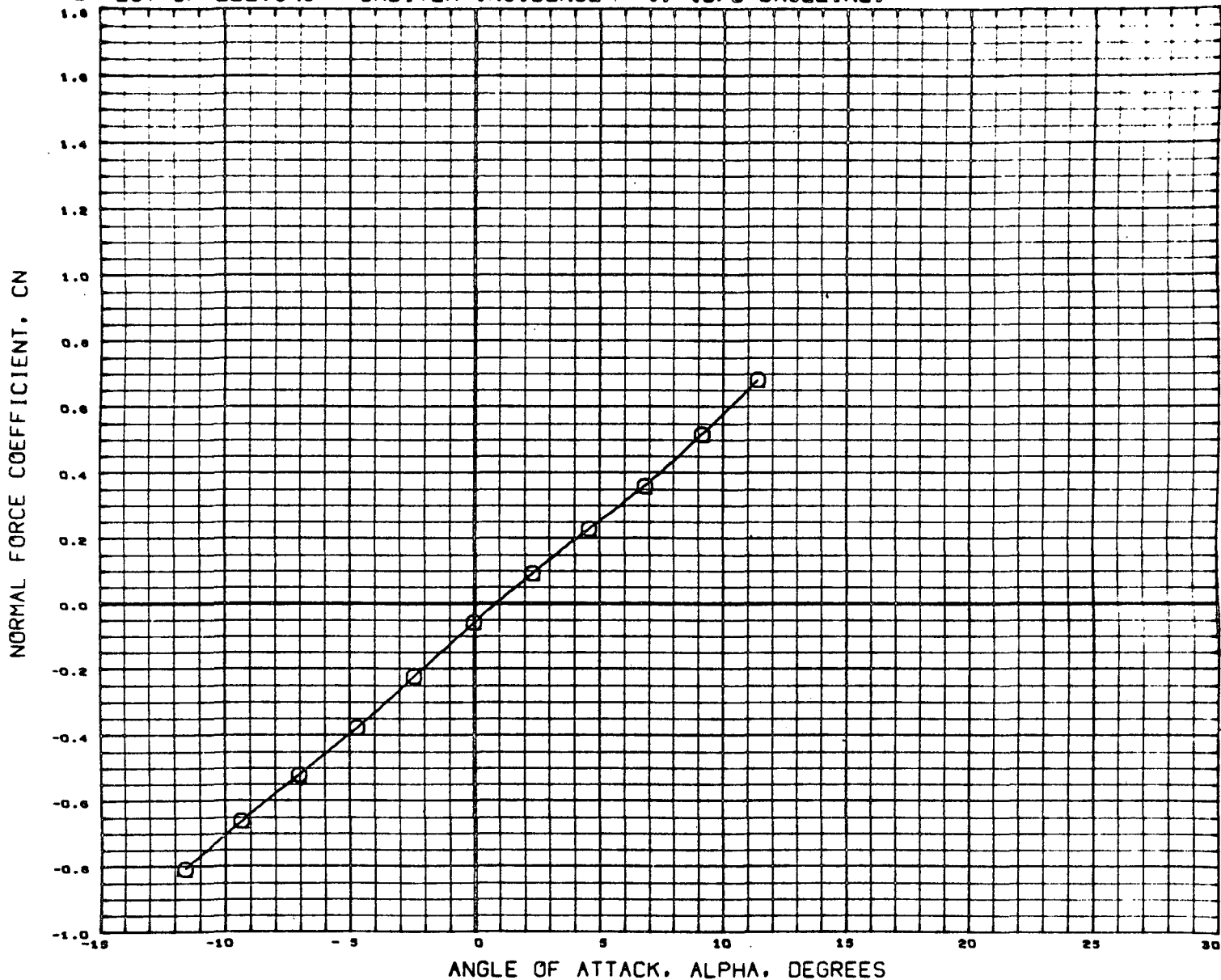


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H32903)	MSPC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(H32913)	MSPC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
						BREF	0.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH .90

PAGE 342

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



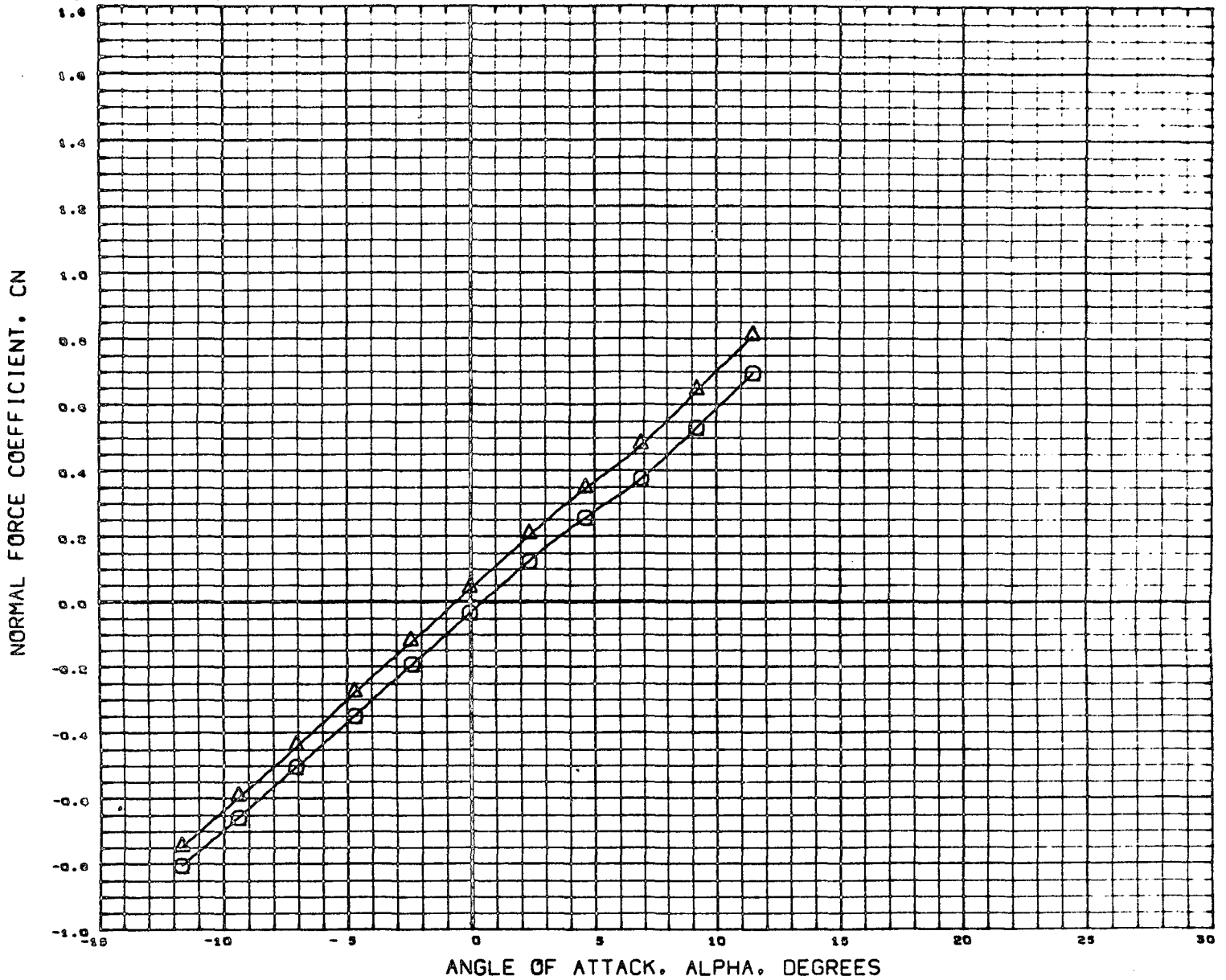
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H32513) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
0.000	4.000	0.000	10.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .99

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3250S)	HSPC490 NR/GD LAUNCH B20C4BW14V8+85W17V17
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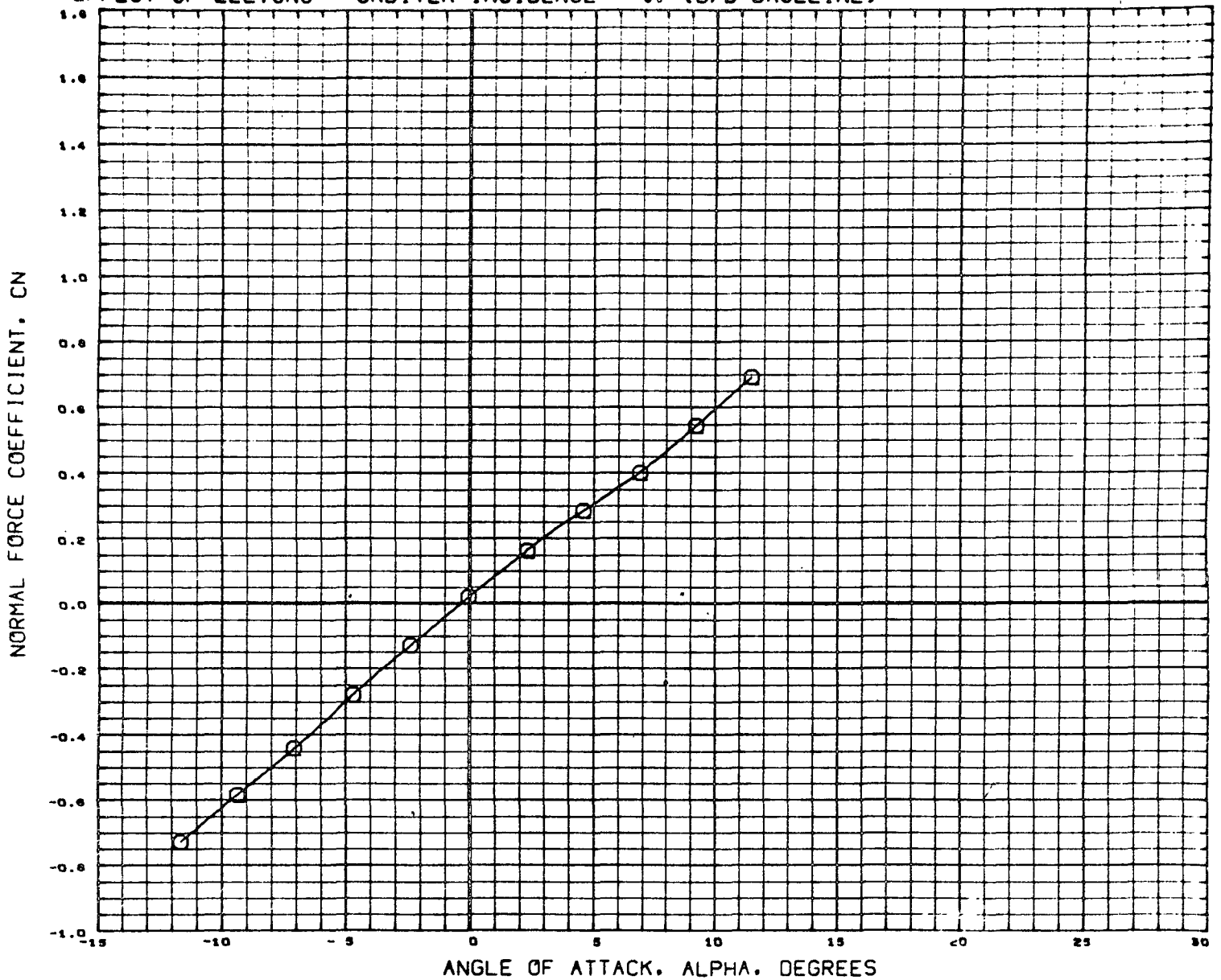
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	4.000	0.000	10.000

REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 1.10

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H32505) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (H32515) DATA NOT AVAILABLE FOR ALL CONDITIONS

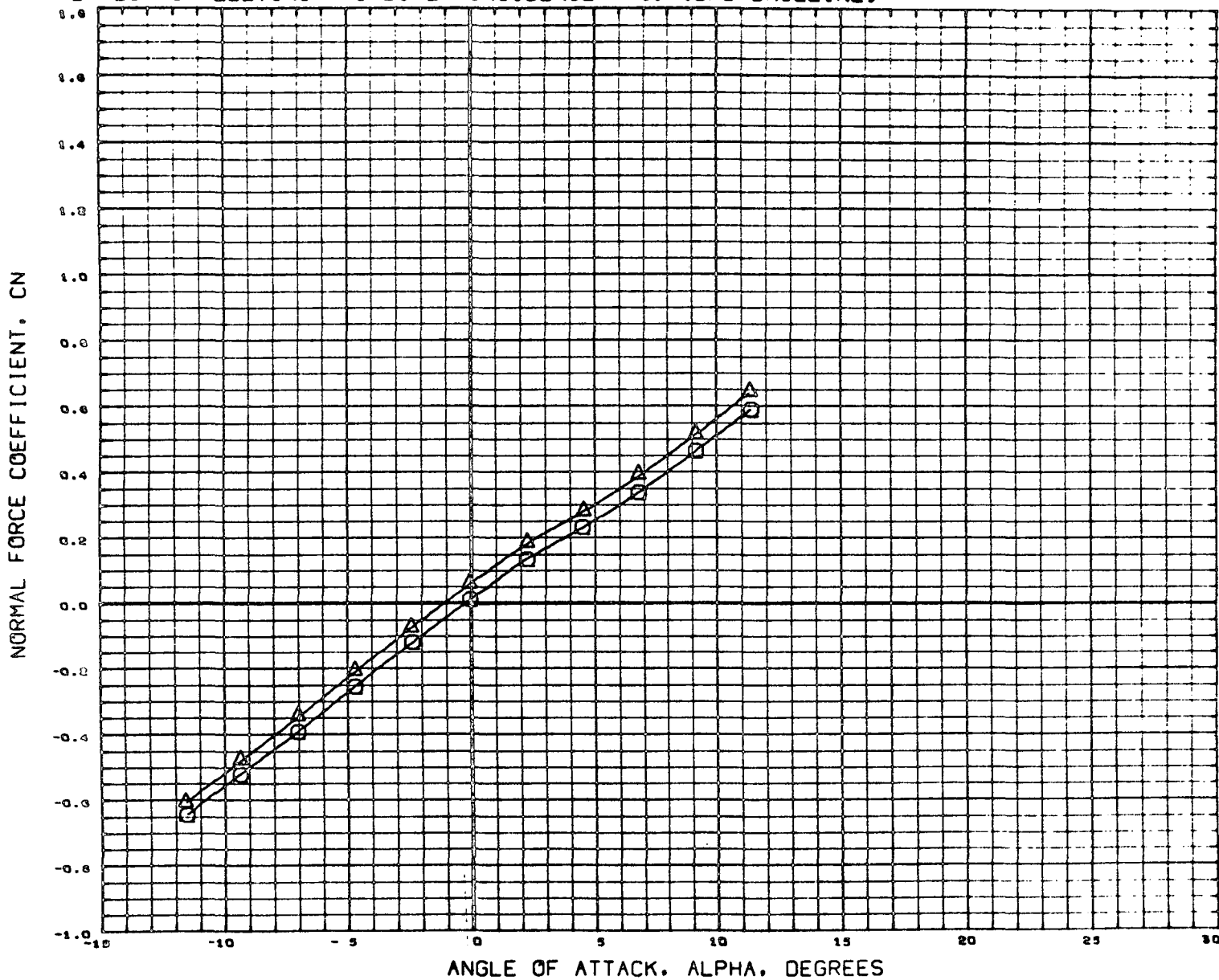
ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	30 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.19

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H32903)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17
(H32919)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

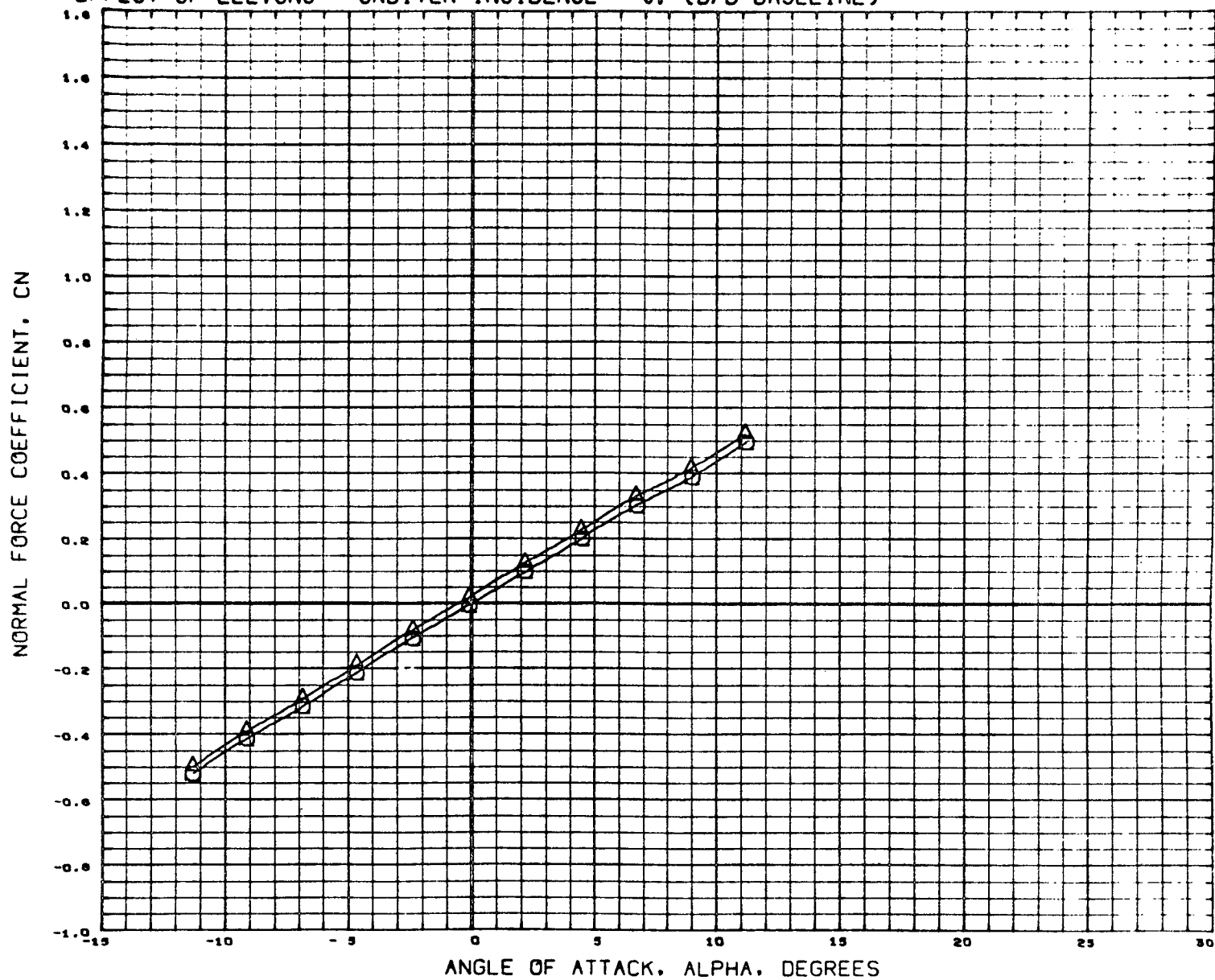
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMPP	0.0000	
YMPP	0.0000	
ZMPP	0.0000	
SCALE	0.0035	SCALE



MACH 1.46

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H32905)  MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (H32913)  MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

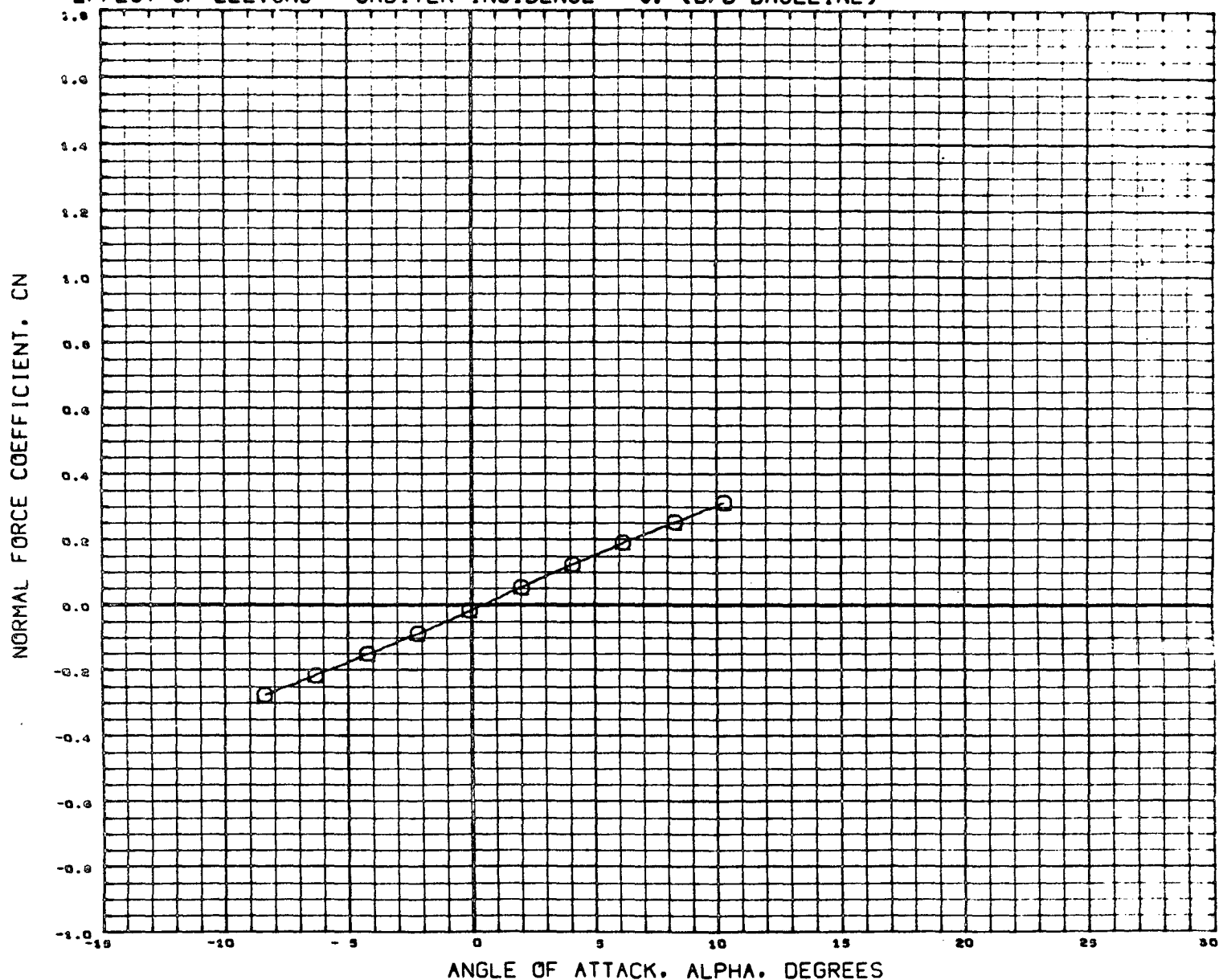
ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION	
SREF	15.8560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 1.96

PAGE 347

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



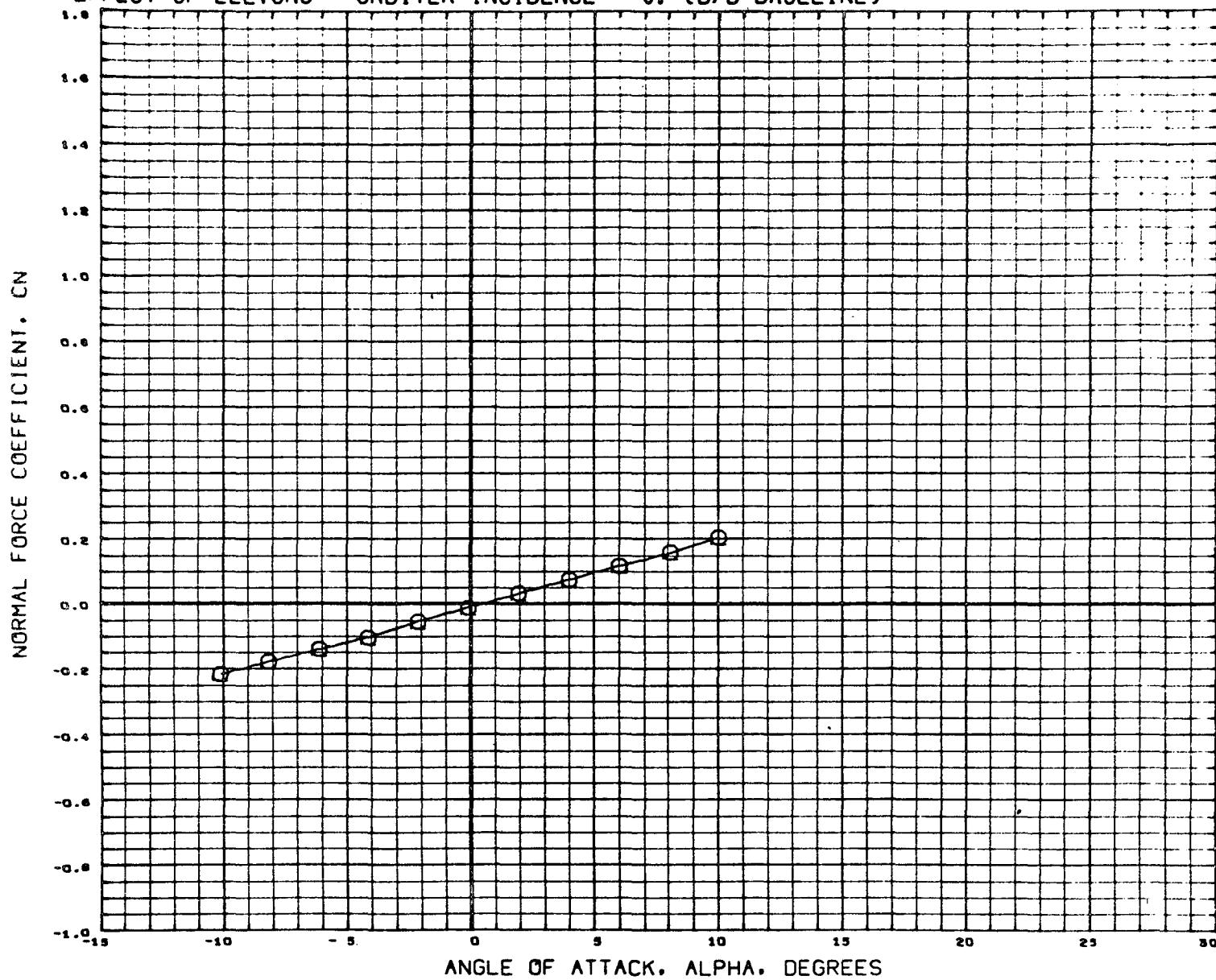
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 (H32913) DATA NOT AVAILABLE FOR ALL CONDITIONS


ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 2.99

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3250S)  M3FC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (H3251S)  DATA NOT AVAILABLE FOR ALL CONDITIONS

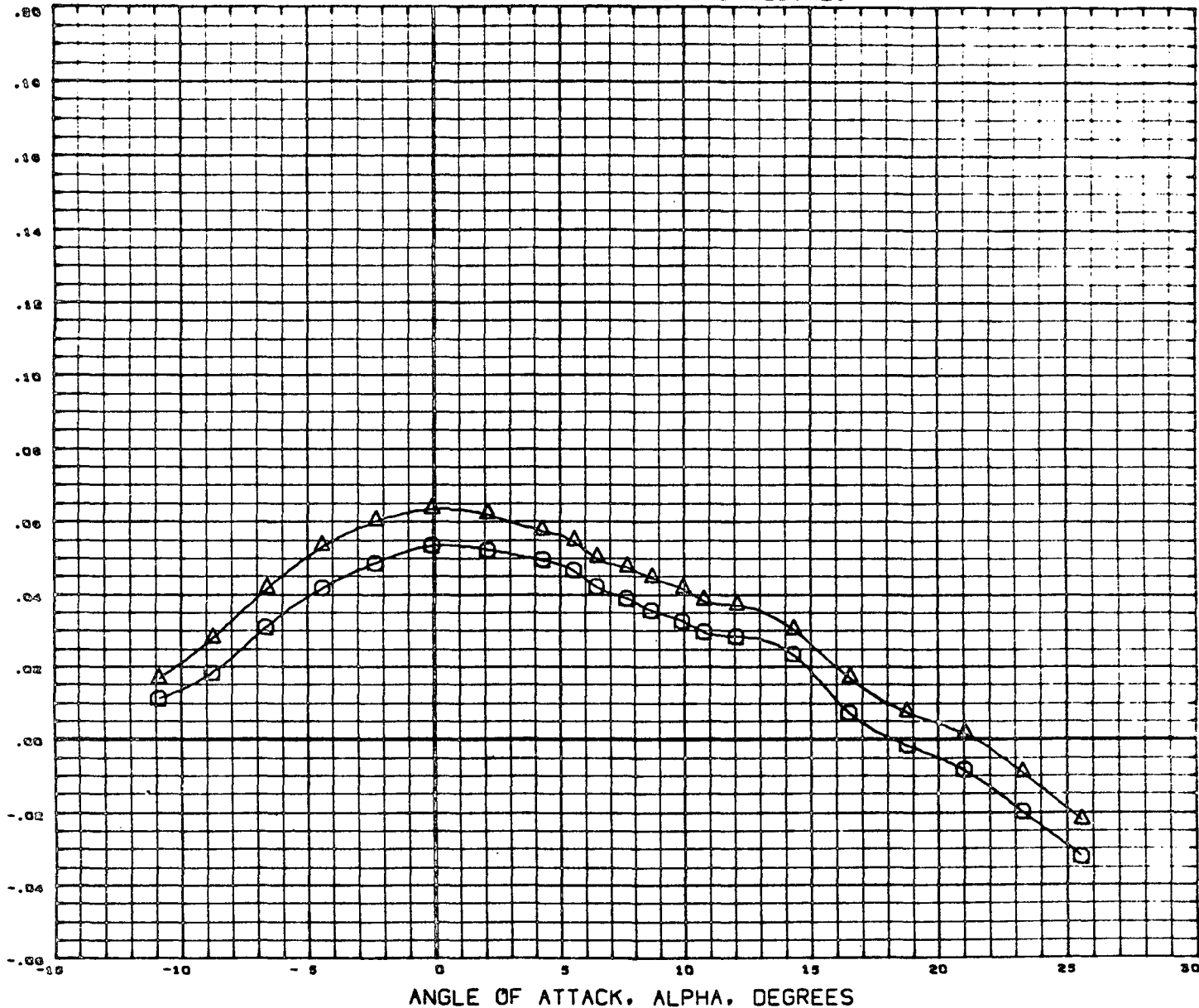
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 50 IN
0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 4.96

PAGE 349

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

FOREBODY AXIAL FORCE COEFFICIENT, CAF

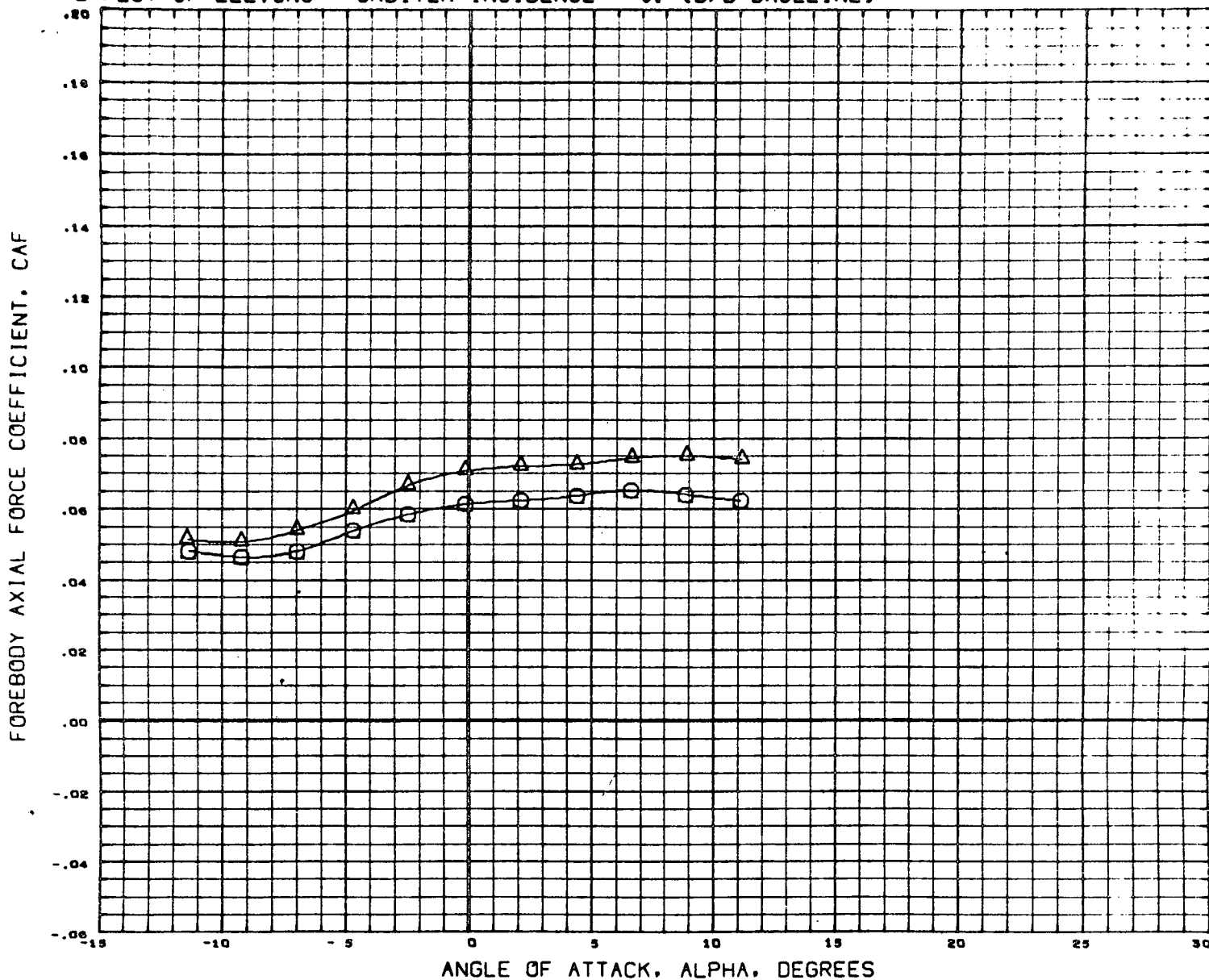


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H32903) MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
 (H32310) MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 34 IN
0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
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				SCALE	0.0035 SCALE

MACH .60

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

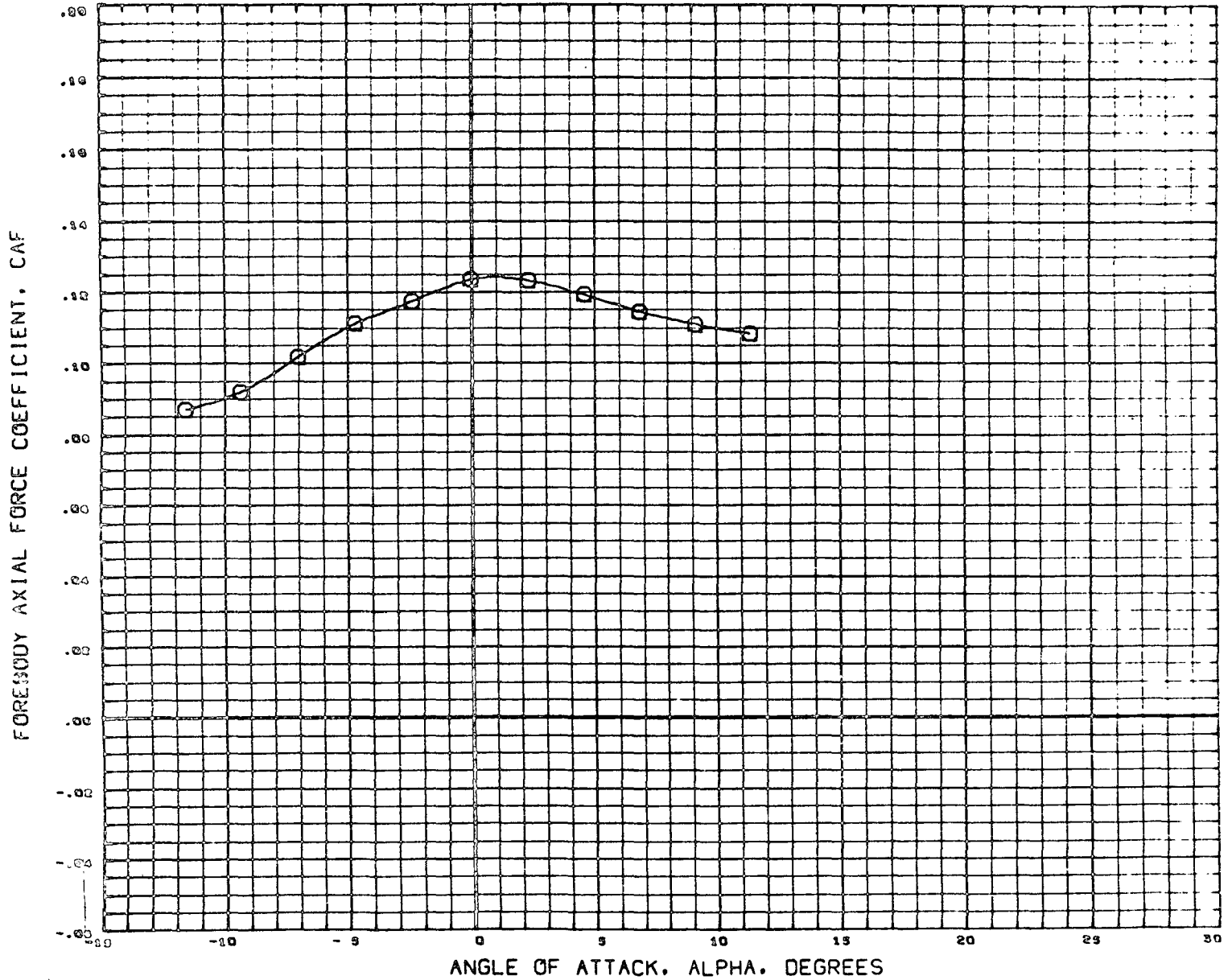


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H32503)	MSFC490 NR/60 LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(H32515)	MSFC490 NR/60 LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H32505) MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17
 (H32510) DATA NOT AVAILABLE FOR ALL CONDITIONS

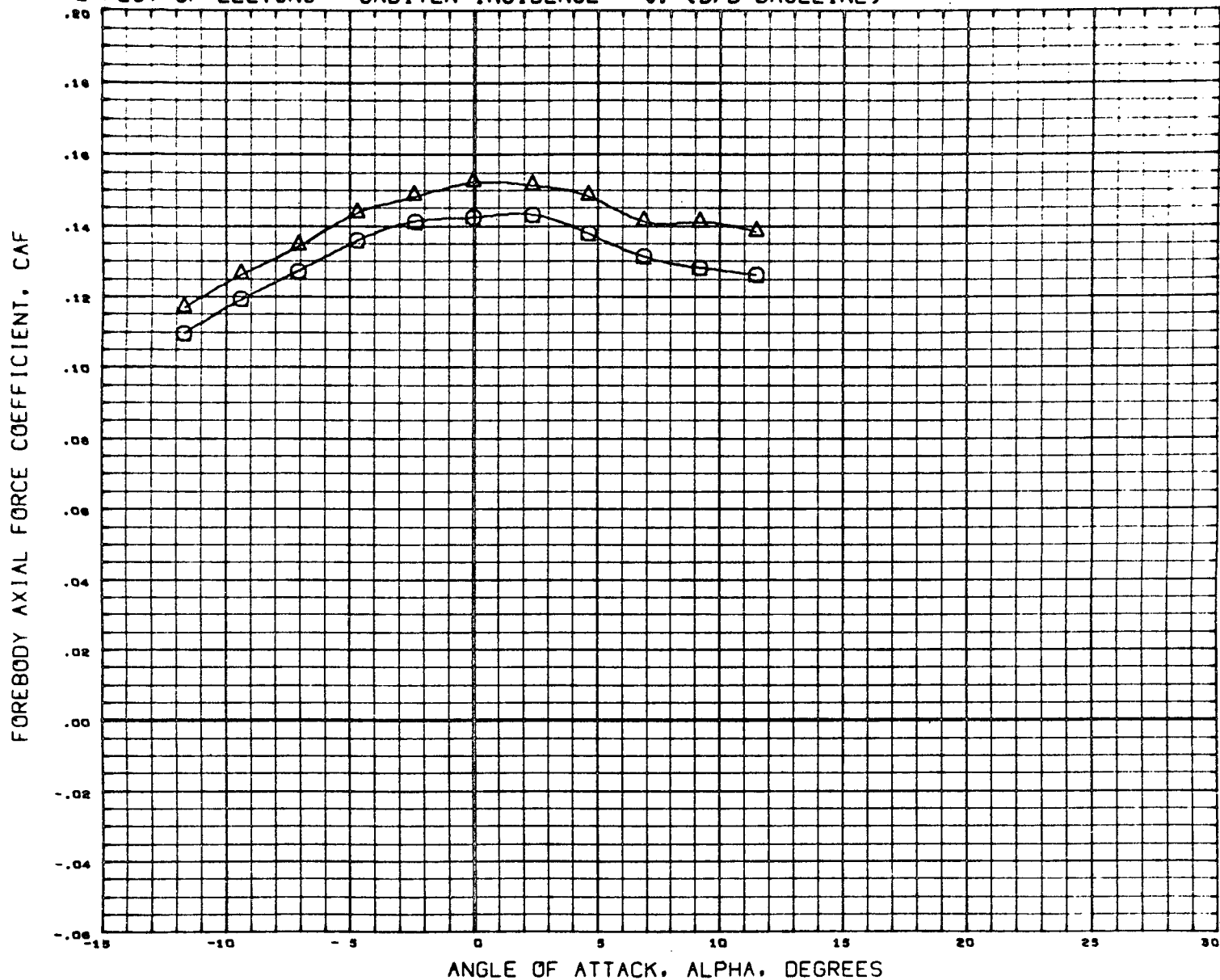
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH .99

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

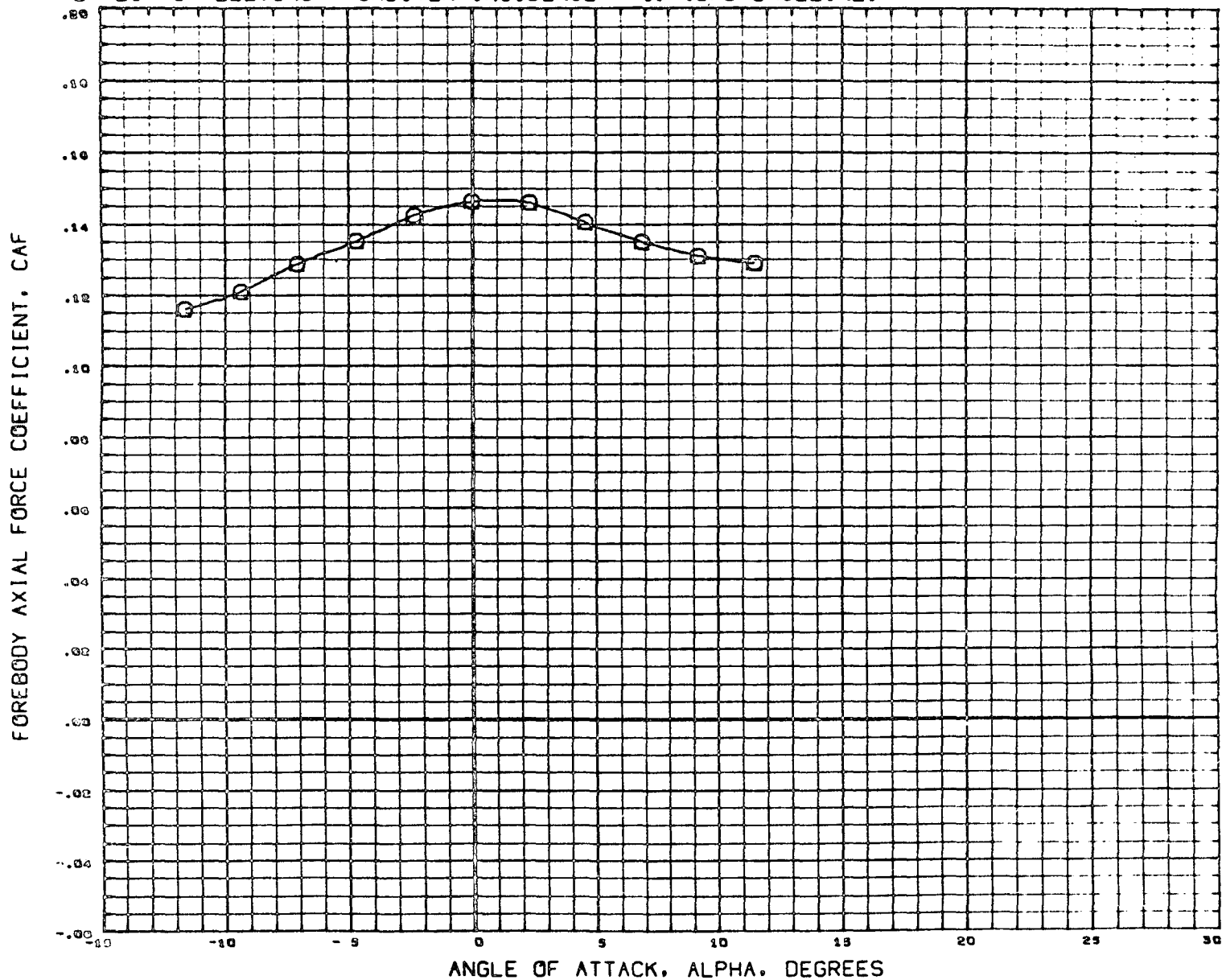




DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H32505)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6960 SQ IN
(H32515)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0039 SCALE

MACH 1.10

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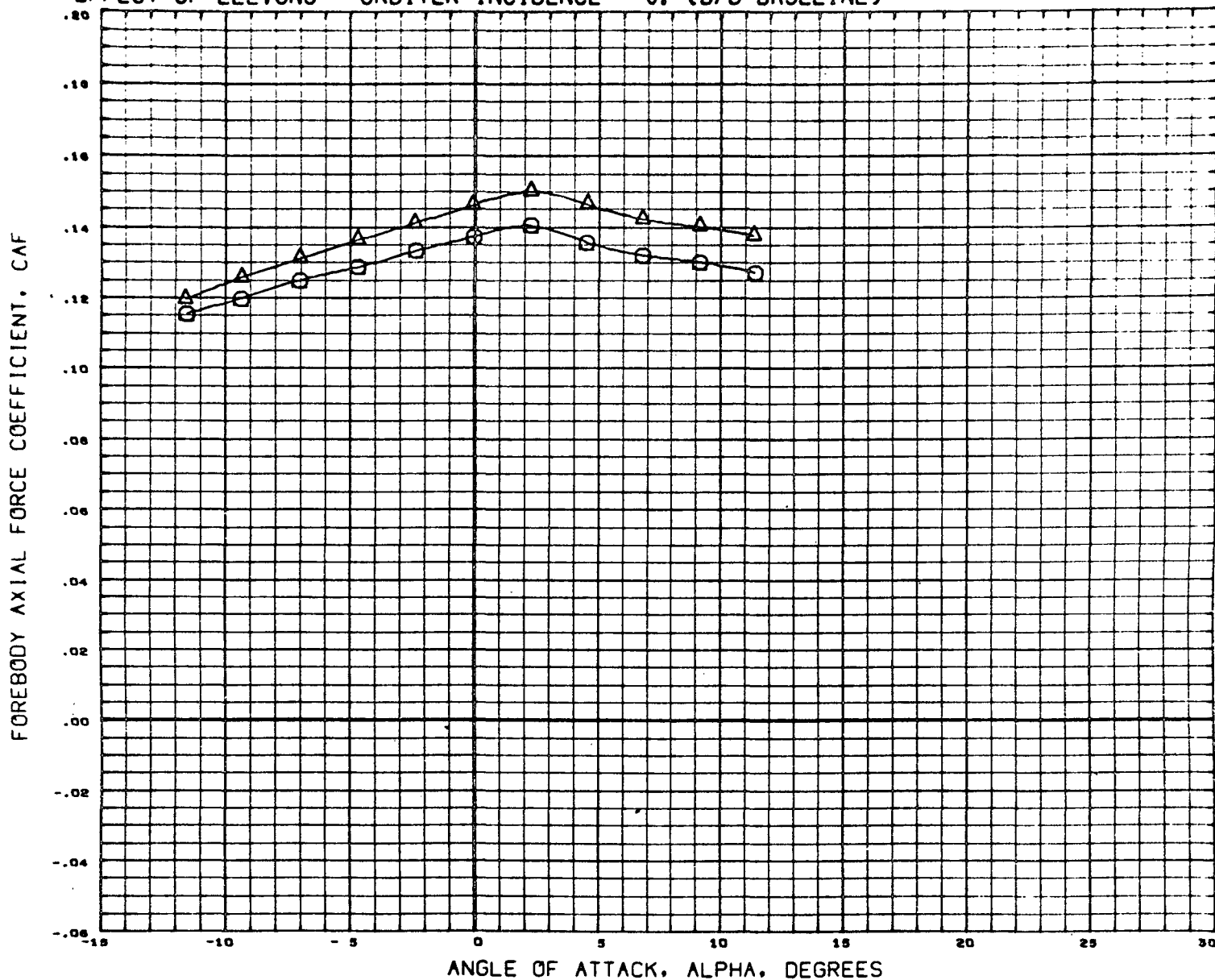
EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA QZT SYMBOL CONFIGURATION DESCRIPTION
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 (H32910)  DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

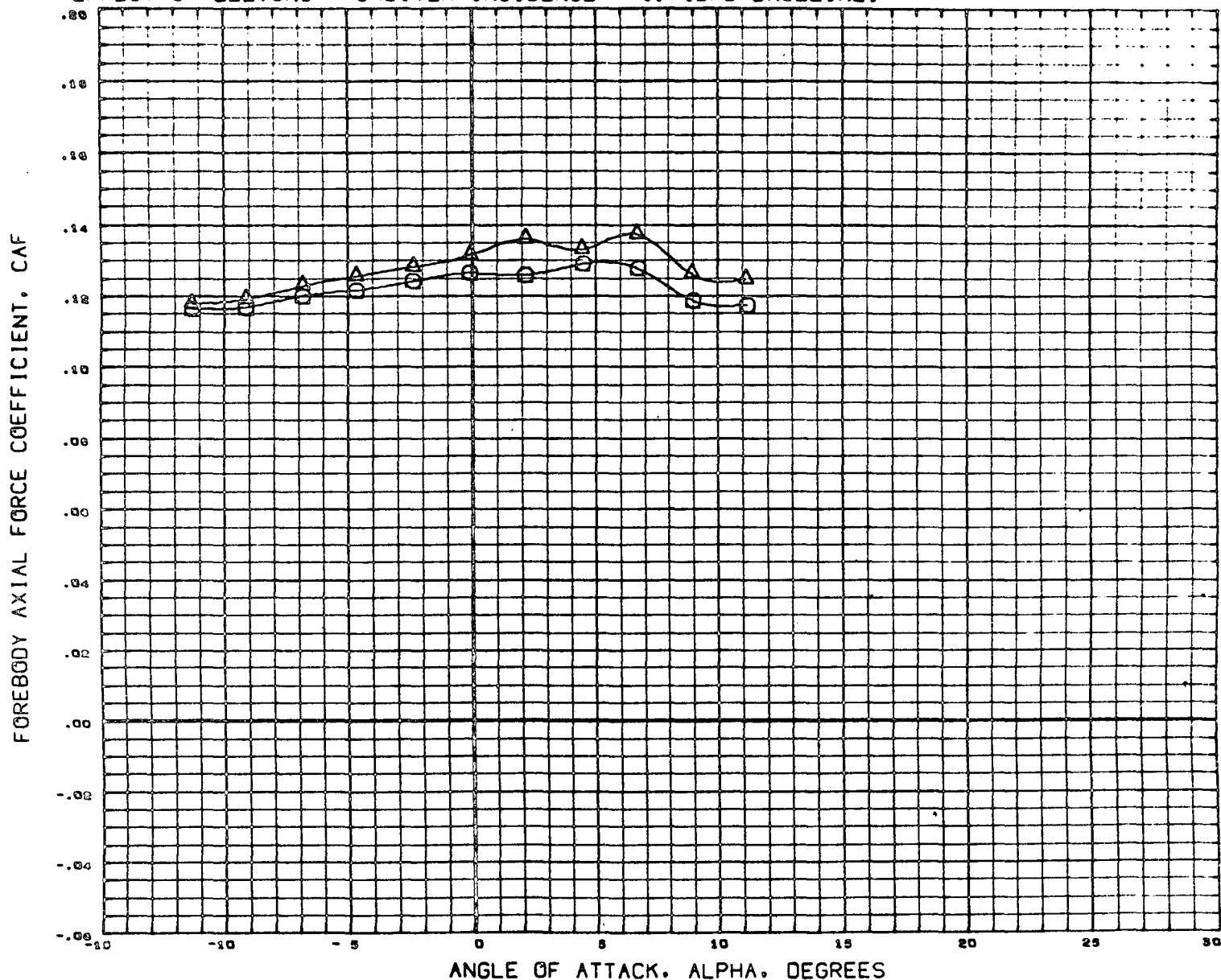


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H32503)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(H32513)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0930 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH 1.46

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H32918) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

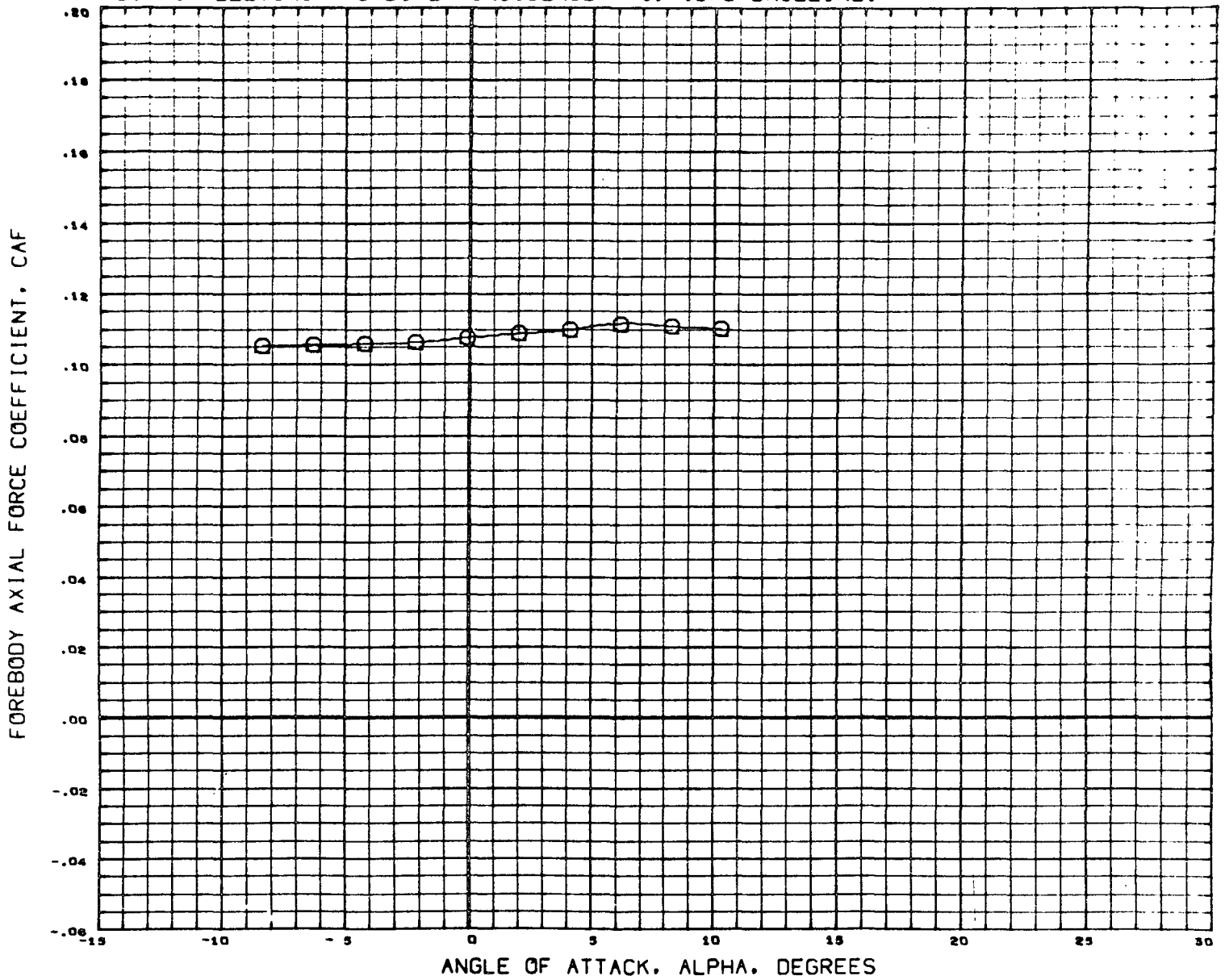
ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H32519) DATA NOT AVAILABLE FOR ALL CONDITIONS

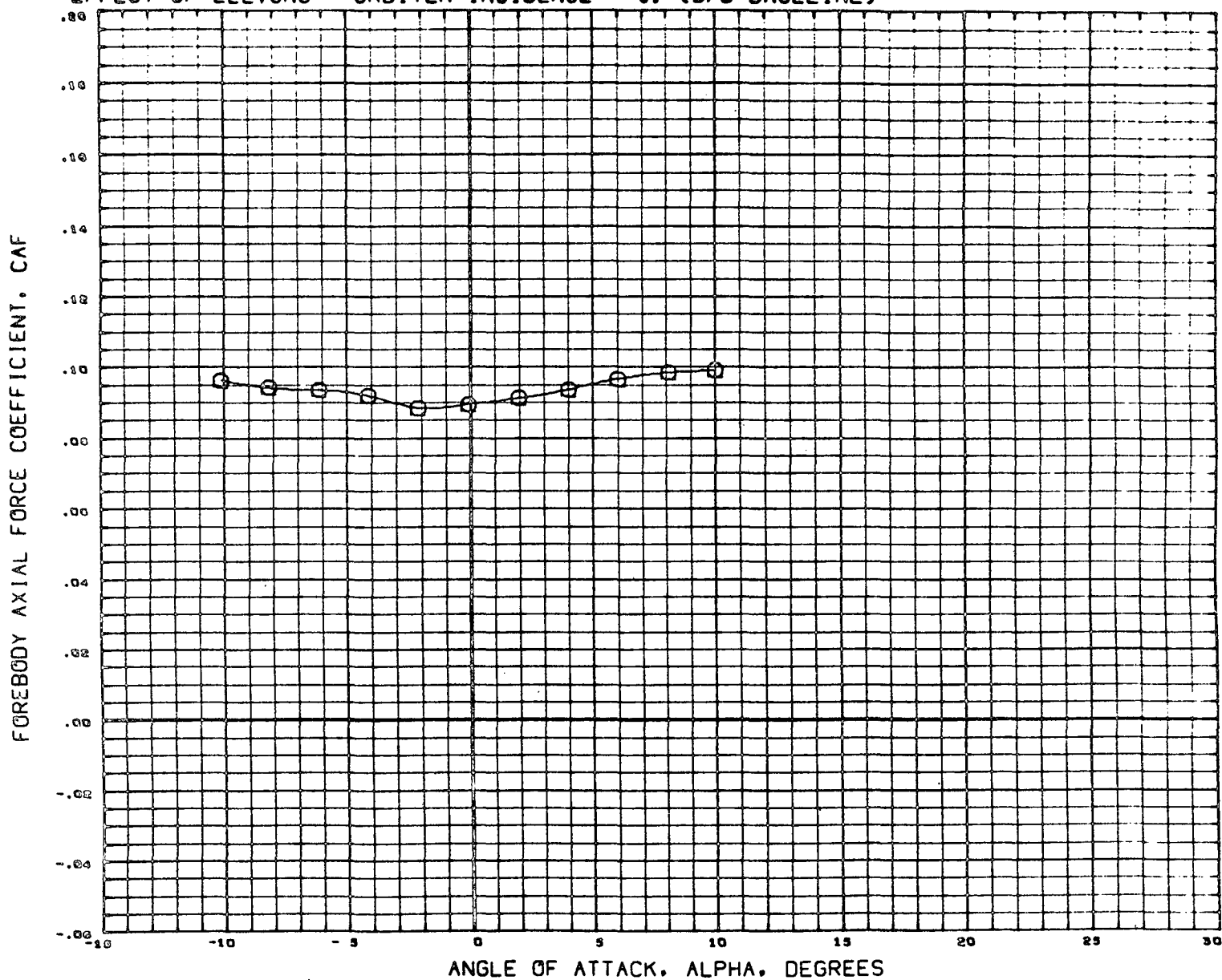
ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 2.99

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H32919)  DATA NOT AVAILABLE FOR ALL CONDITIONS

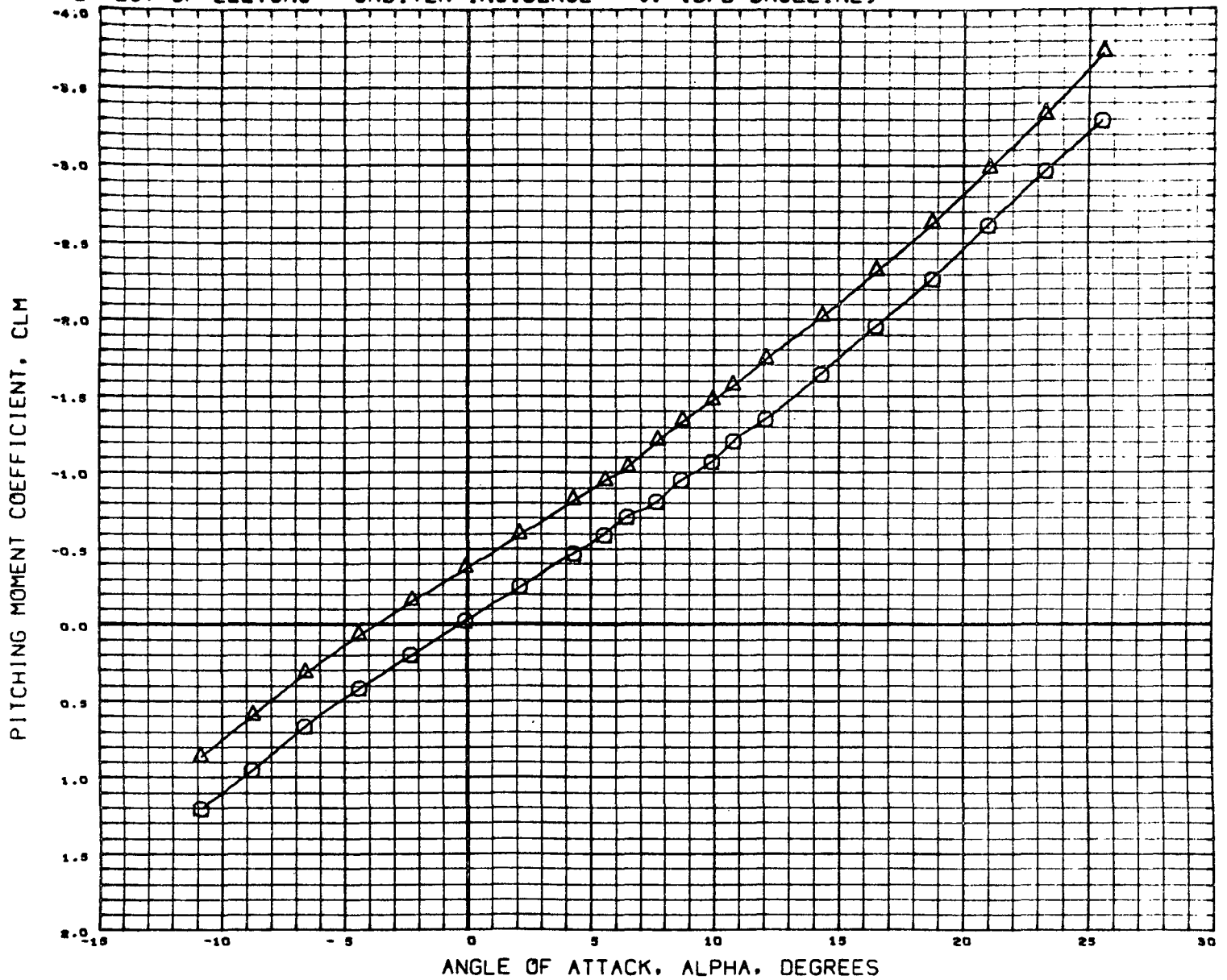
ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.8560	50 IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 4.96

PAGE 358

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

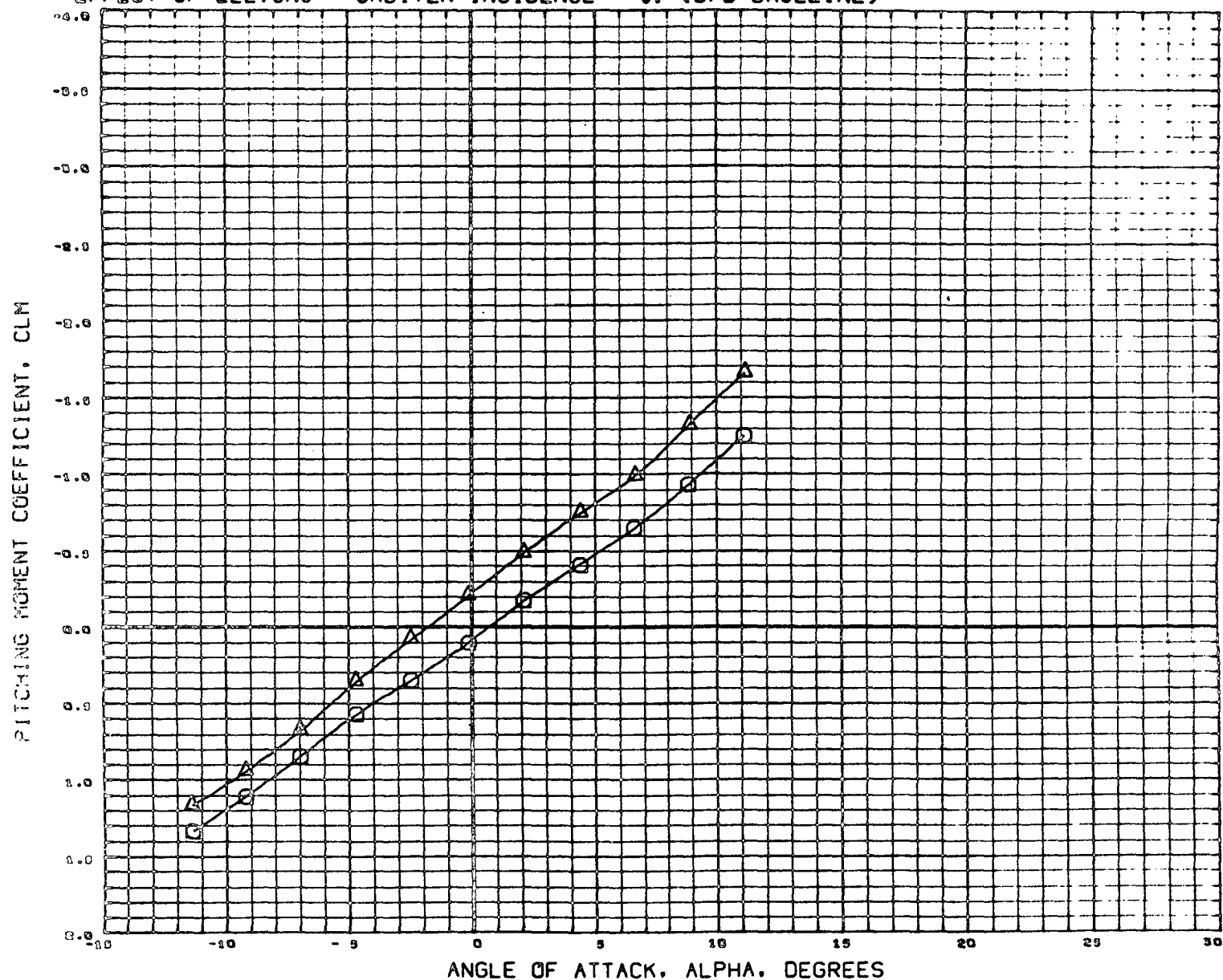


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H32505)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 50 IN
(H32513)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H32903)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(H32915)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

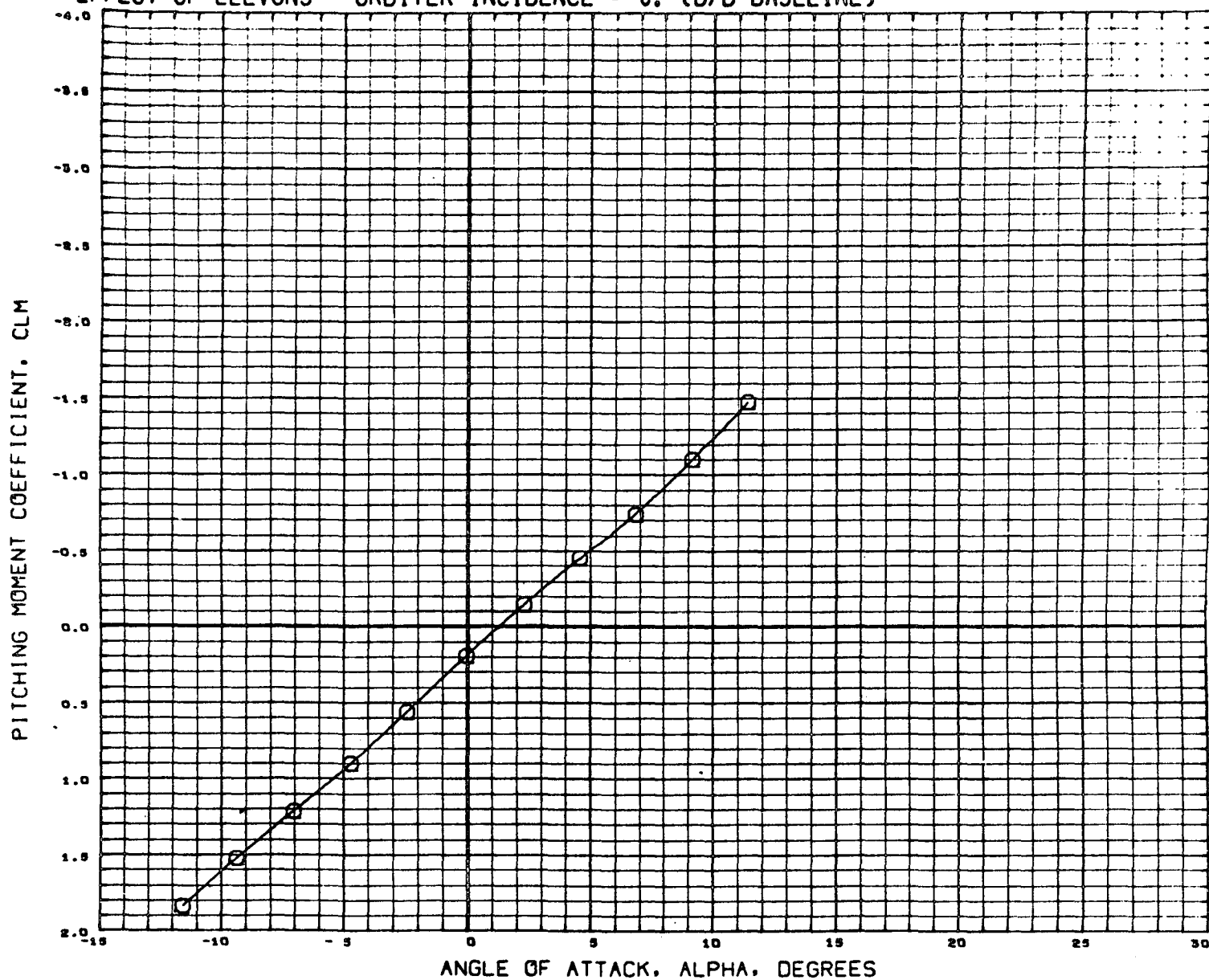
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.0560	50 IN
LREF	3.0950	INCHES
BREF	0.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH .90

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



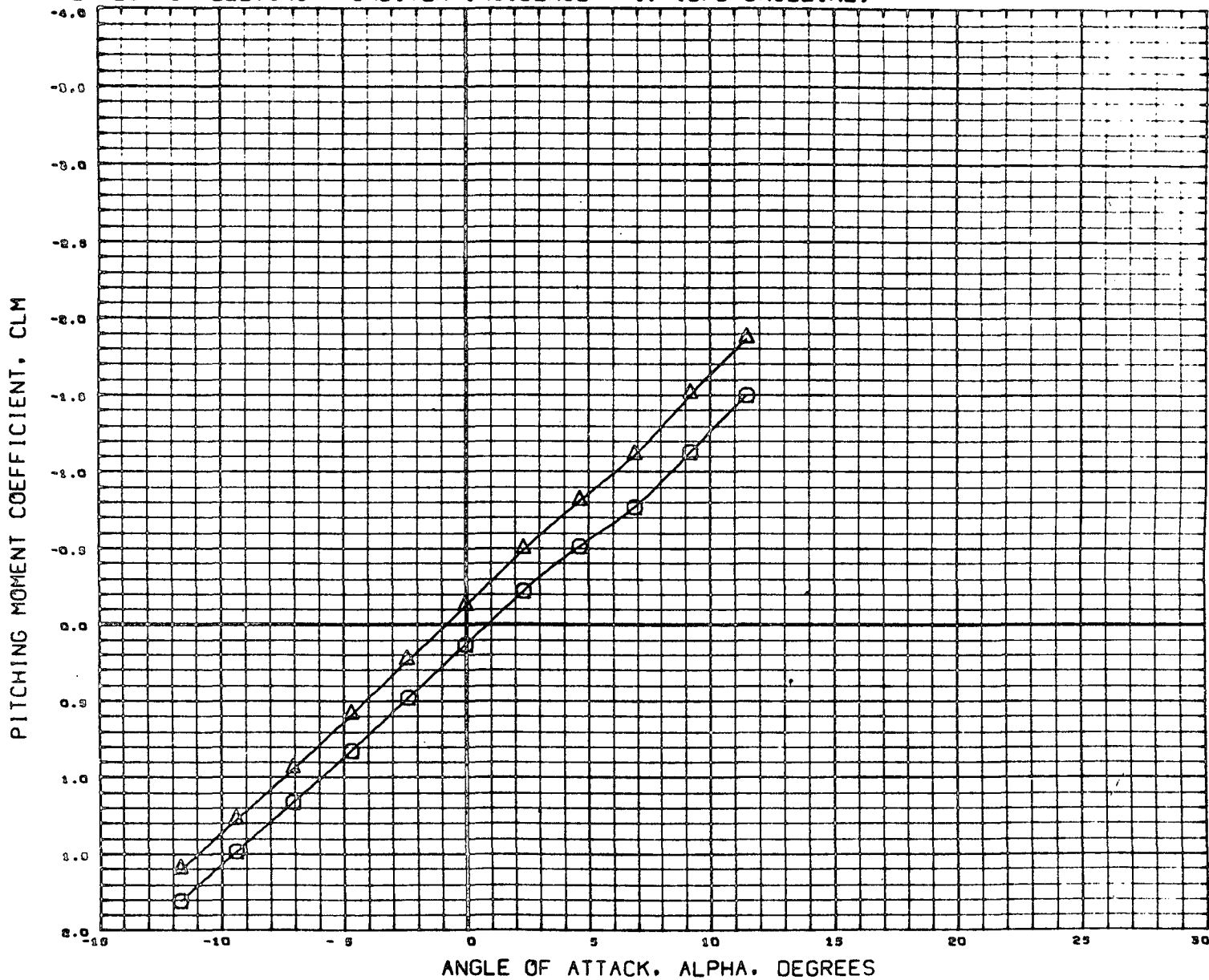
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 (H32515)  DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH .99

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



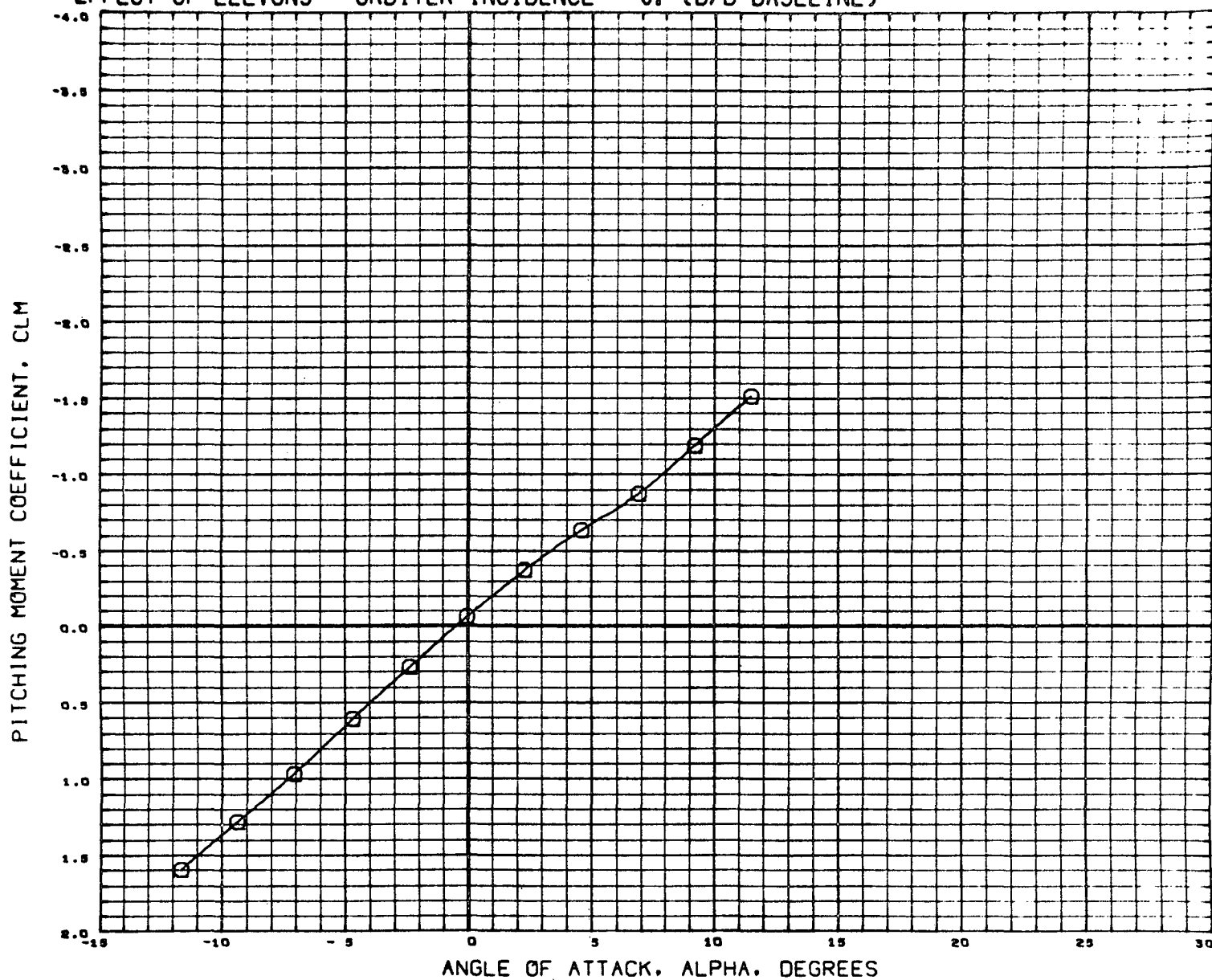
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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ORBNIC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
0.000	4.000	0.000	10.000	LREF	3.0930 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0033 SCALE

MACH 1.10

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



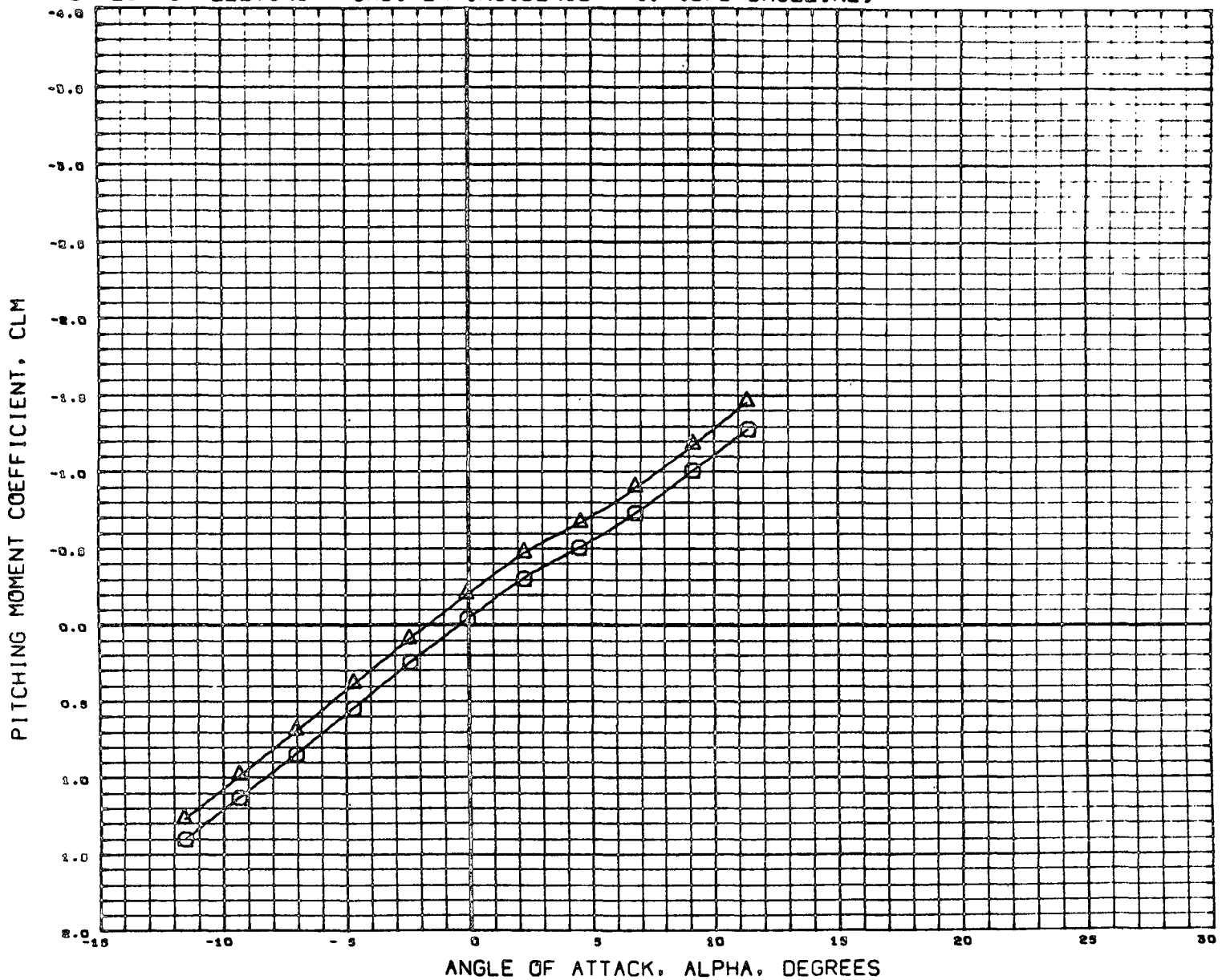
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H32915) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBITN	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6360 SQ IN
0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	0.0990 INCHES
				XMRR	0.0000
				YMRR	0.0000
				ZMRR	0.0000
				SCALE	0.0035 SCALE

MACH 1.19

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H32903)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17
(H32915)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	4.000	0.000	10.000

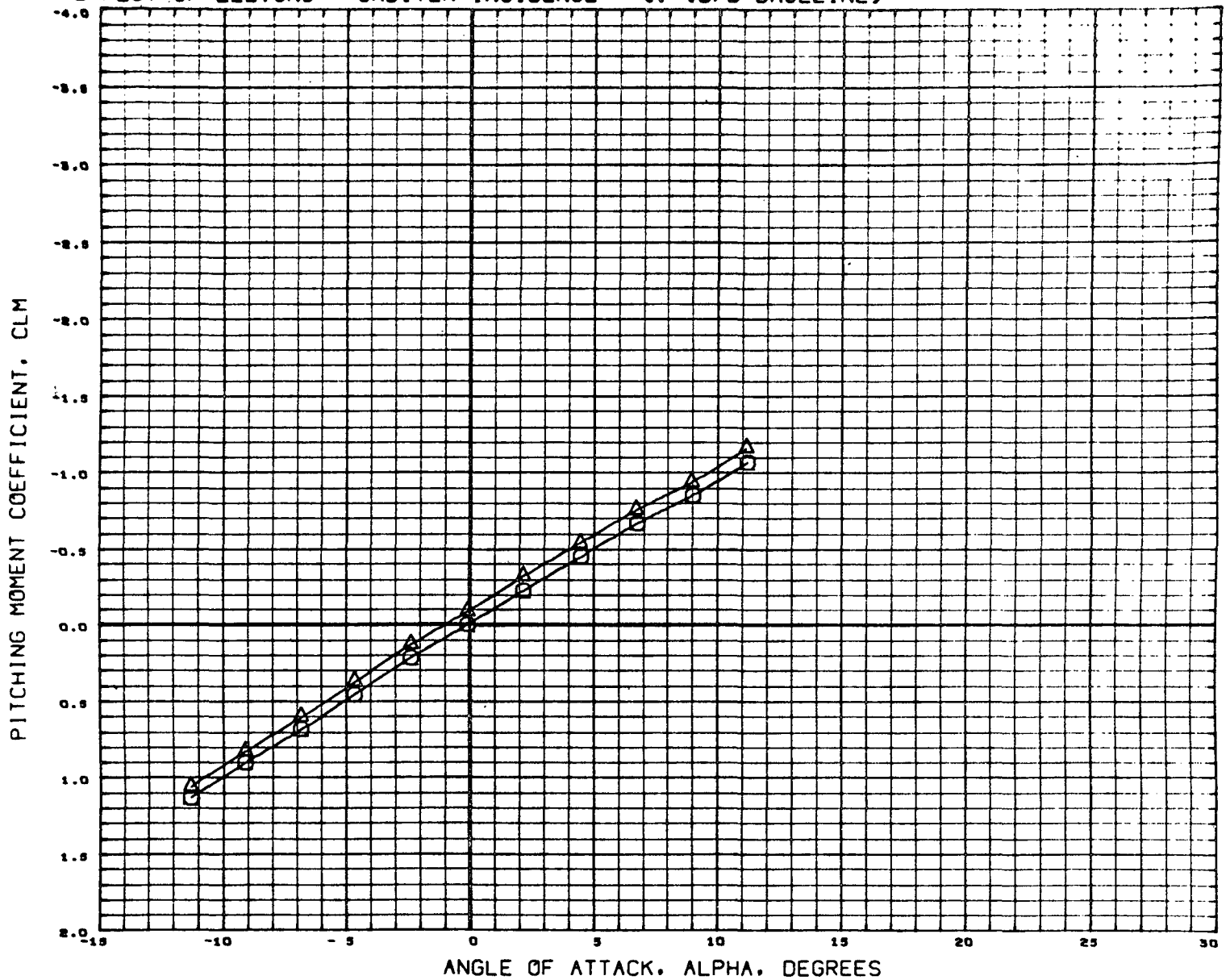
REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0950	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH

1.46

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H32303)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(H32313)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

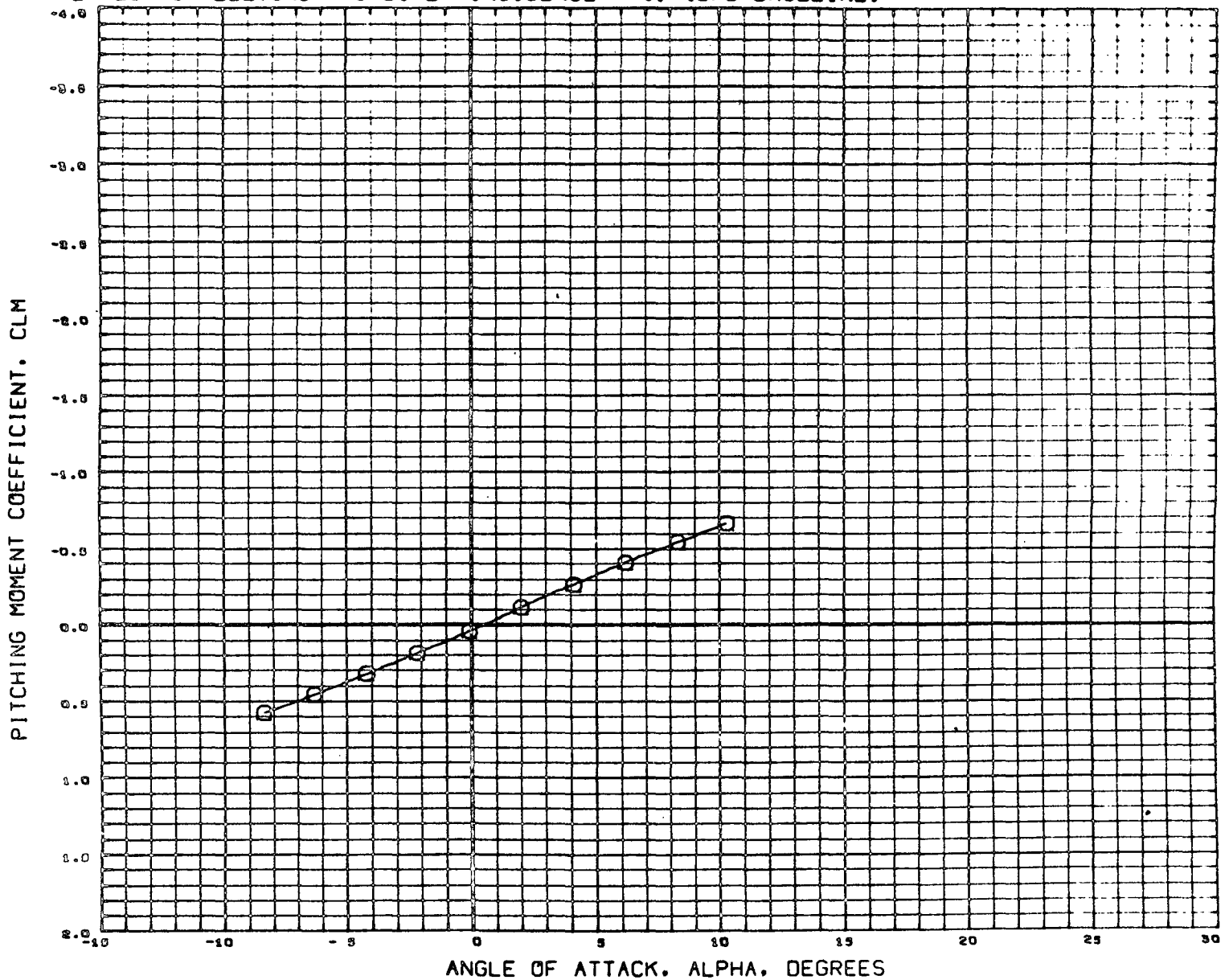
ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H32508) HSPC490 NR/60 LAUNCH B20C4BW14V8+B3W17V17
 (H32516) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR
0.000	4.000	0.000	0.000
0.000	4.000	0.000	10.000

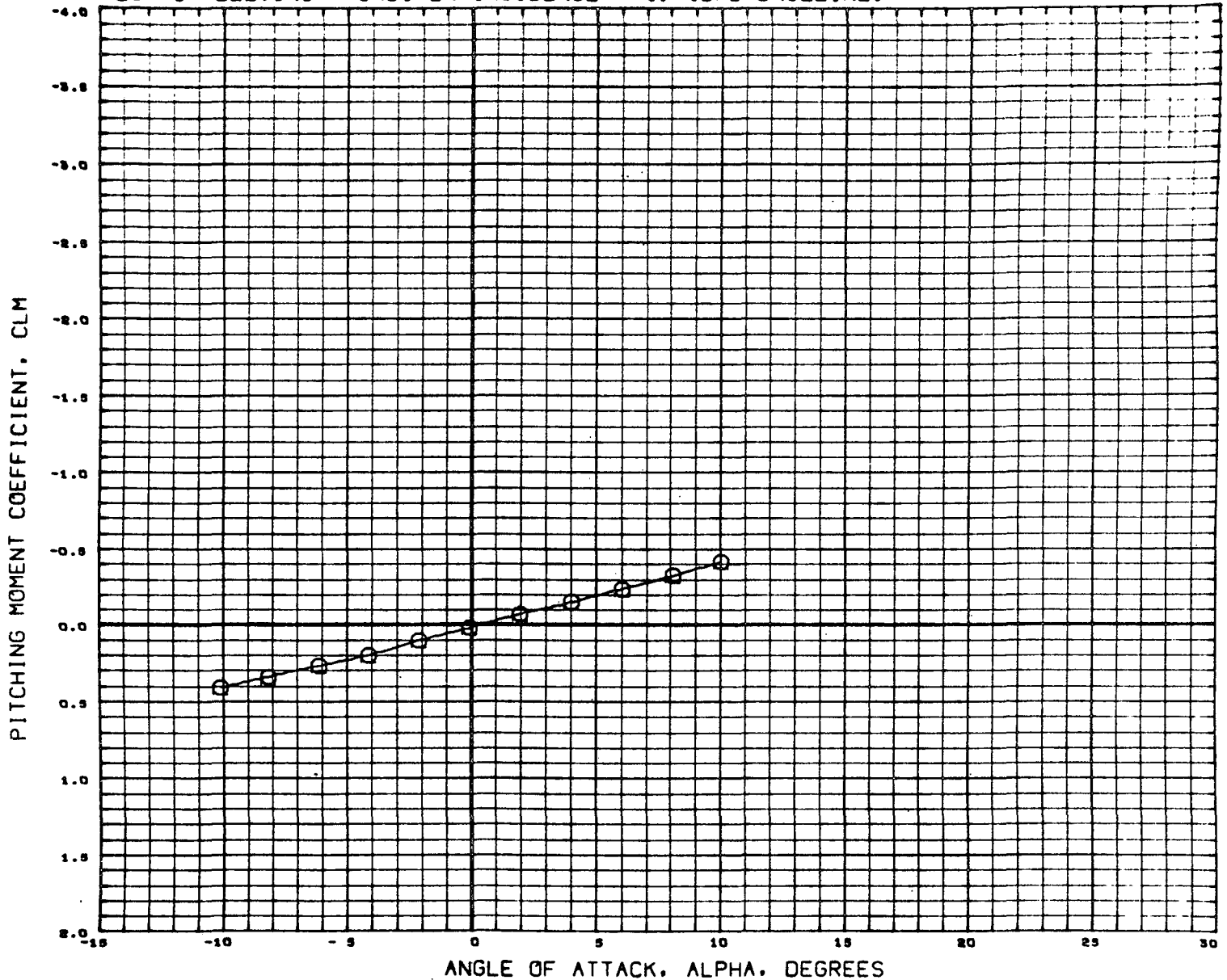
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LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH

2.99

PAGE 366

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



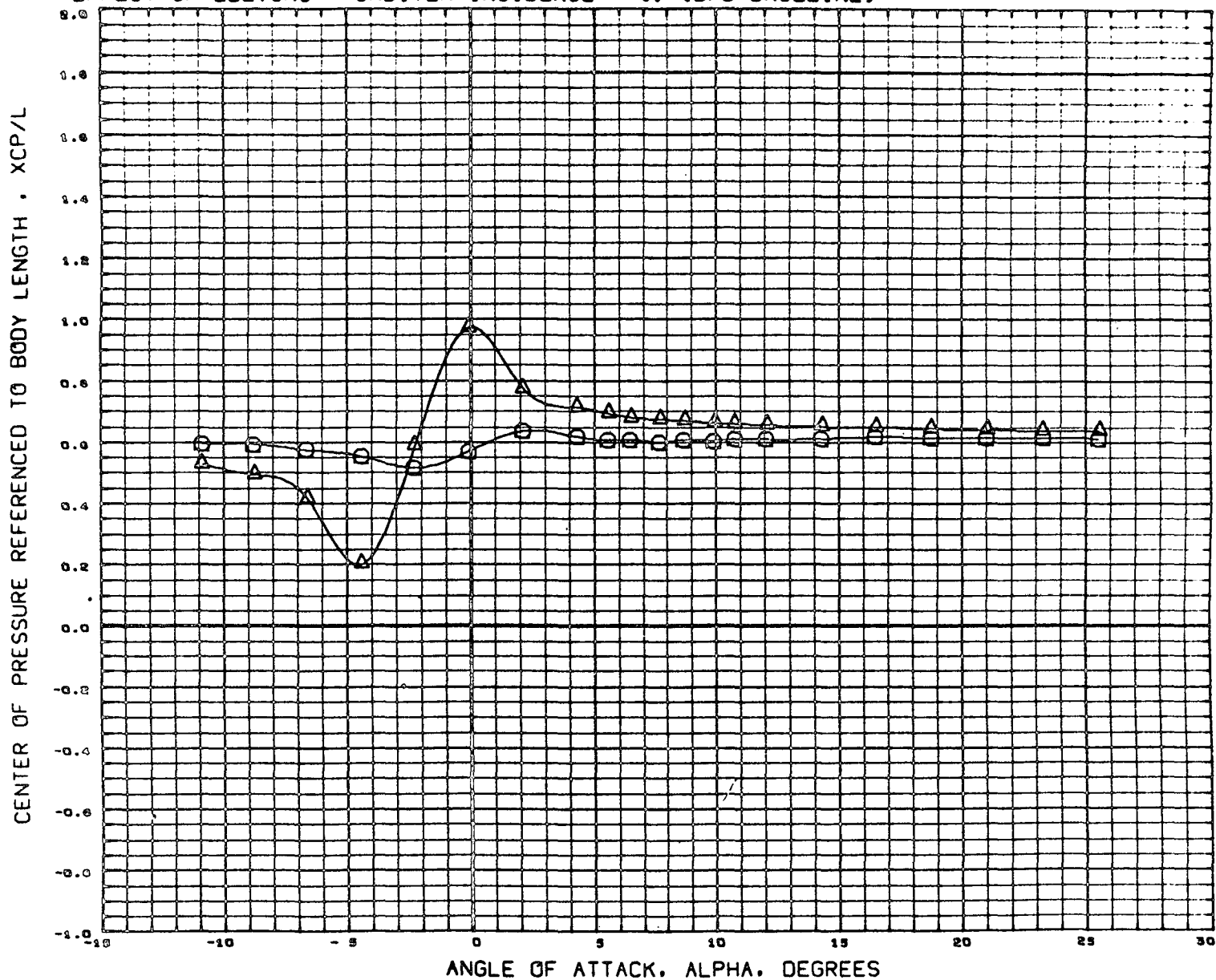
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 (H32515)  DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
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0.000	4.000	0.000	10.000	LREF	3.0950	INCHES
				BREF	6.0990	INCHES
				XMRF	0.0000	
				YMRF	0.0000	
				ZMRF	0.0000	
				SCALE	0.0035	SCALE

MACH 4.96

PAGE 367

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3290S)	MSFC490 NR/GD LAUNCH 820C48W14V8+83W17V17
(H3291S)	MSFC490 NR/GD LAUNCH 820C48W14V8+83W17V17

ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0033	SCALE

MACH .60

PAGE 368

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



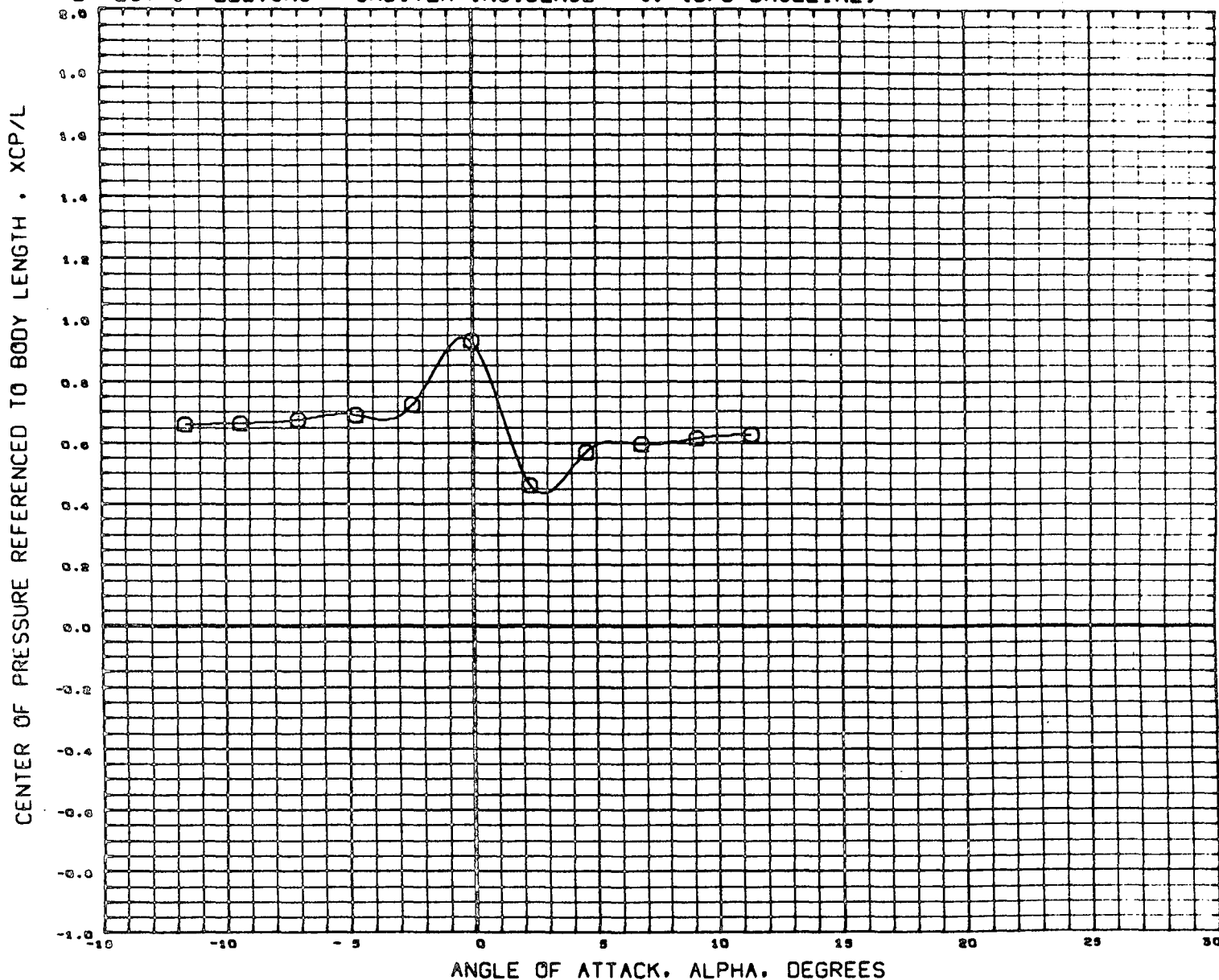
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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(H32513)	HSPC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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0.000	4.000	0.000	10.000	LREF 3.0930 INCHES
				BREF 6.0990 INCHES
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				ZMRP 0.0000
				SCALE 0.0033 SCALE

MACH .90

PAGE 369

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H32513) DATA NOT AVAILABLE FOR ALL CONDITIONS

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0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	0.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH .99

PAGE 370

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

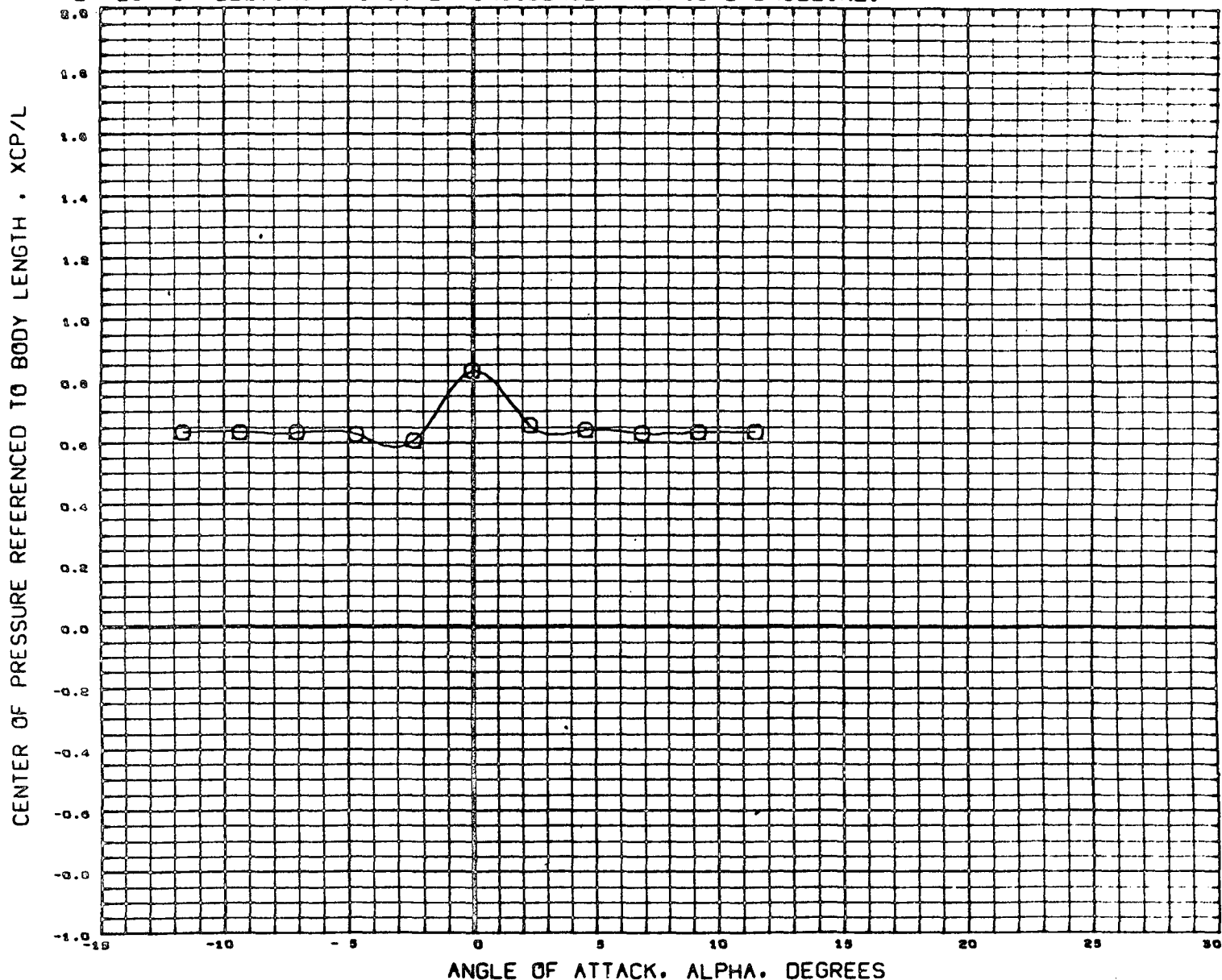


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(H32913)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

PAGE 371

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H32903)  MSFC490 NR/GD LAUNCH B20C48W14V8+BSW17V17
 (H32515)  DATA NOT AVAILABLE FOR ALL CONDITIONS

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0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
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				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.19

PAGE 372

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H32503) H32503 NR/GD LAUNCH B20C4BW14V8+85W17V17

(H32518) H32518 NR/GD LAUNCH B20C4BW14V8+85W17V17

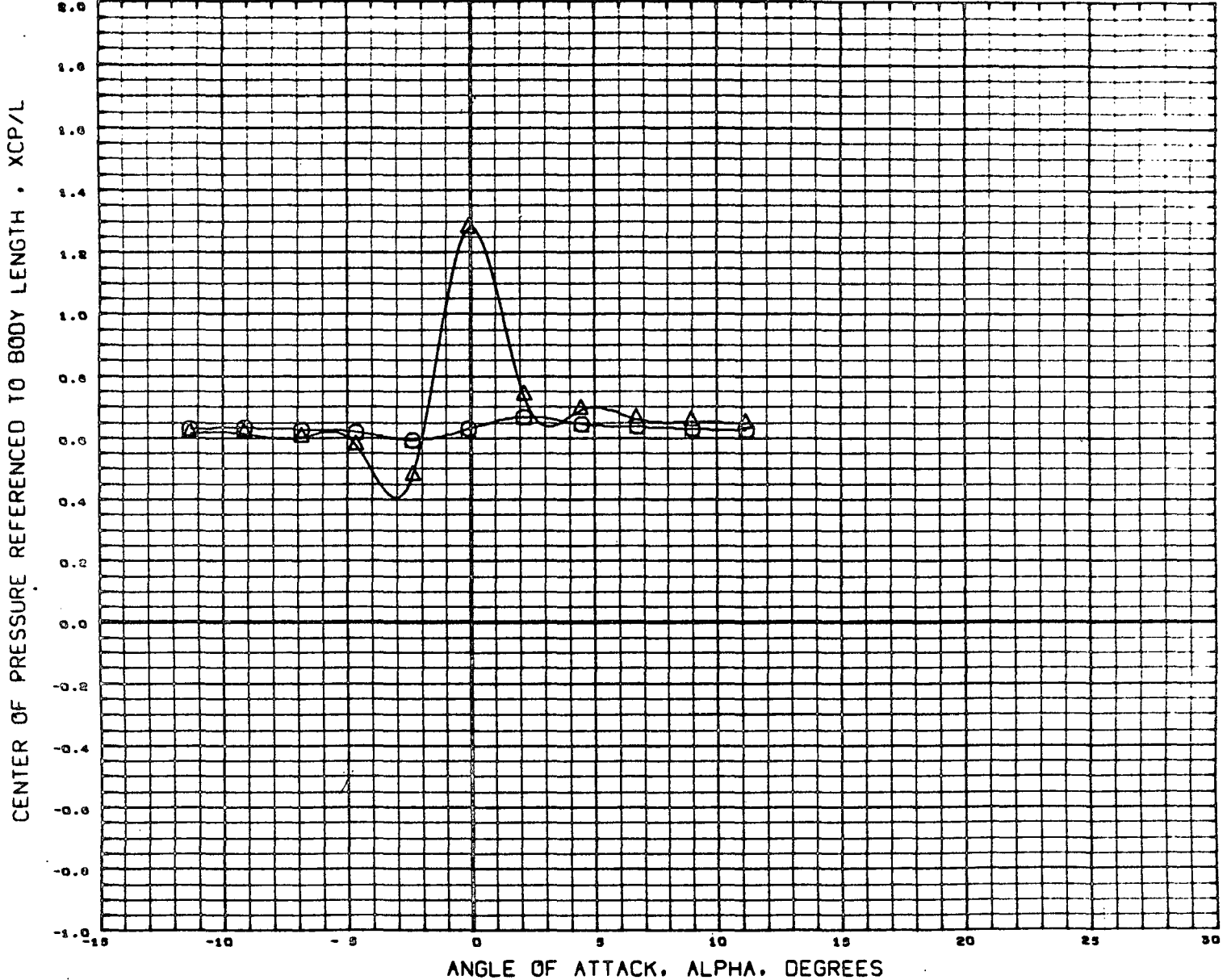
ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE



MACH

1.46

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H32503)  MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17
 (H32510)  MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

ORBITER	POSITION	BETA	ELVATR	REFERENCE INFORMATION	
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0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
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				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH

1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H32303) MSFC490 NR/GD LAUNCH 820C4BW14V8+B5W17V17
 (H32318) DATA NOT AVAILABLE FOR ALL CONDITIONS


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				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 2.99

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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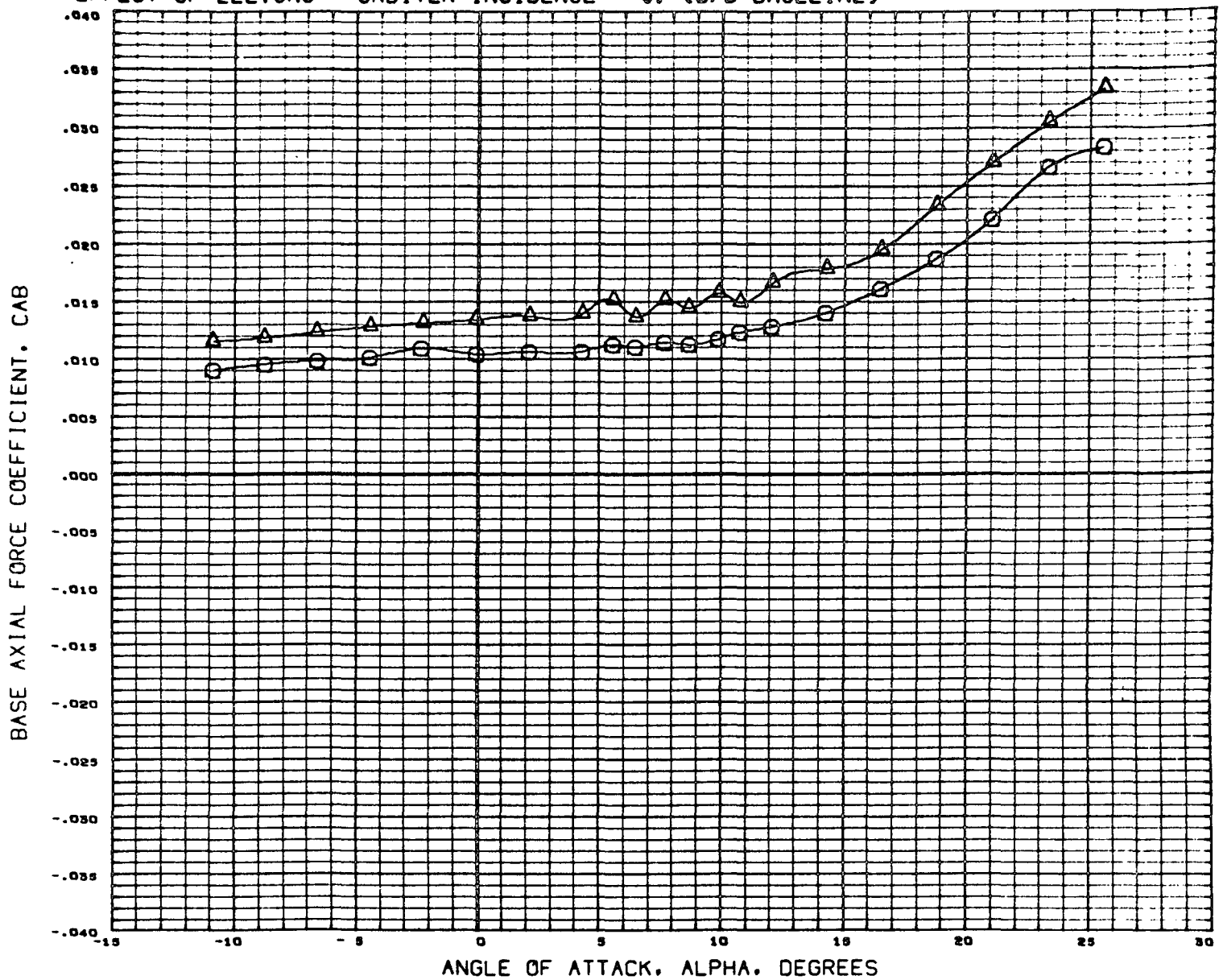
ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRF	0.0000
YMRF	0.0000
ZMRF	0.0000
SCALE	0.0033 SCALE

MACH 4.96

PAGE 376

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

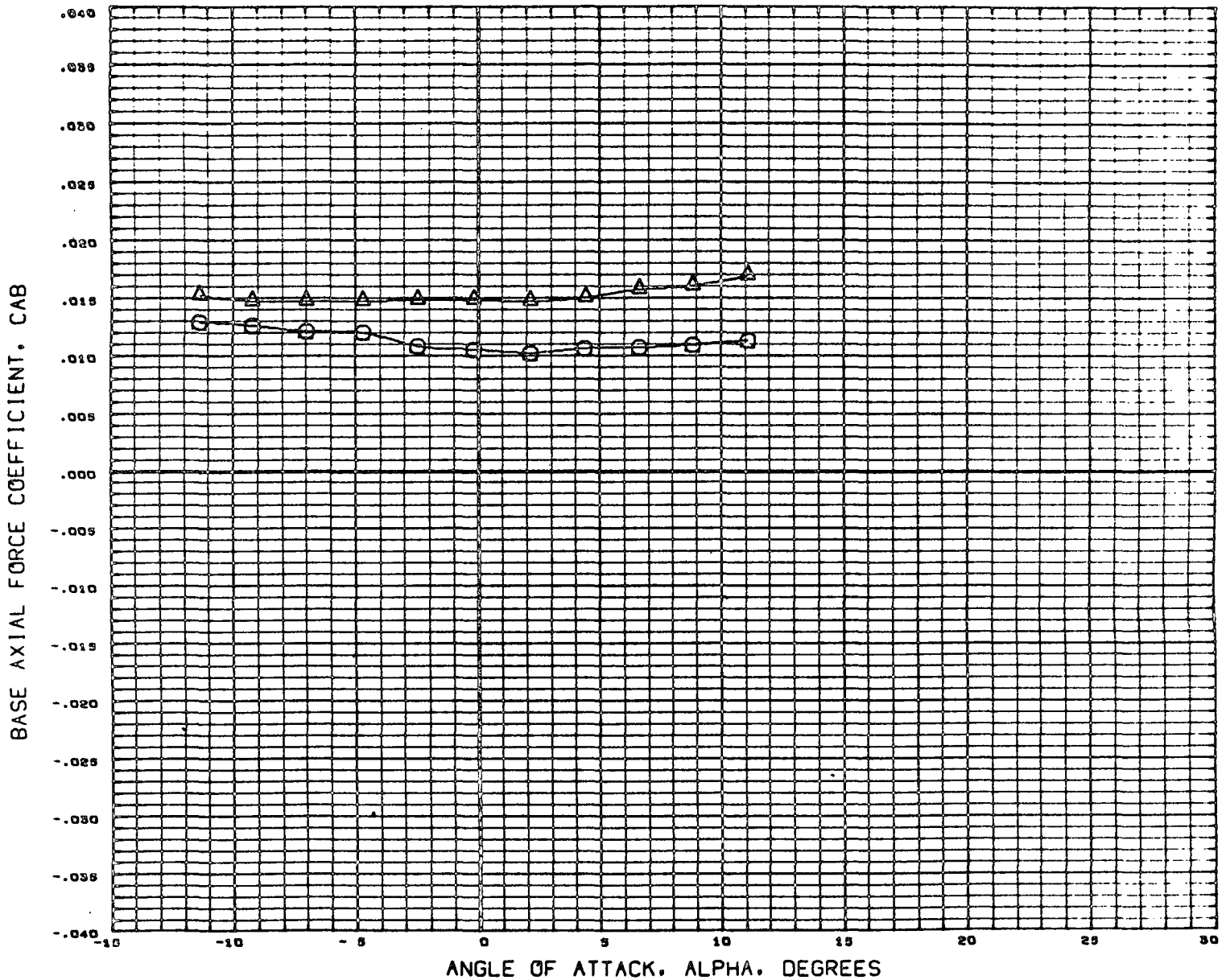


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						BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

MACH .60

PAGE 377

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

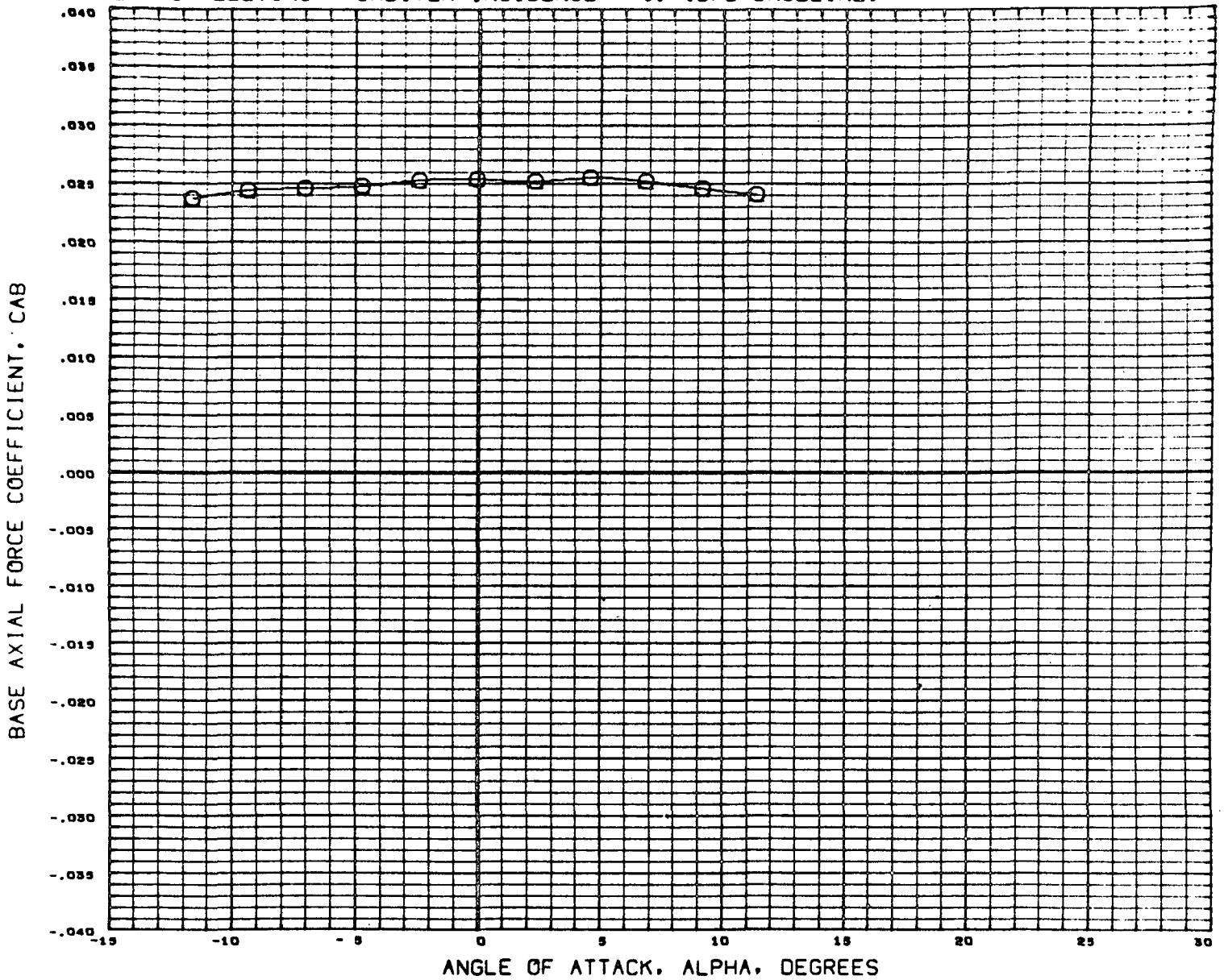


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(H32918)	MSPC490 NR/GD LAUNCH B20C48W14V8+B35W17V17	0.000	4.000	0.000	10.000	LREF	3.0930 INCHES
						BRZF	6.0990 INCHES
						XMRF	0.0000
						YMRF	0.0000
						ZMRF	0.0000
						SCALE	0.0035 SCALE

MACH .90

PAGE 378

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H32515)  DATA NOT AVAILABLE FOR ALL CONDITIONS

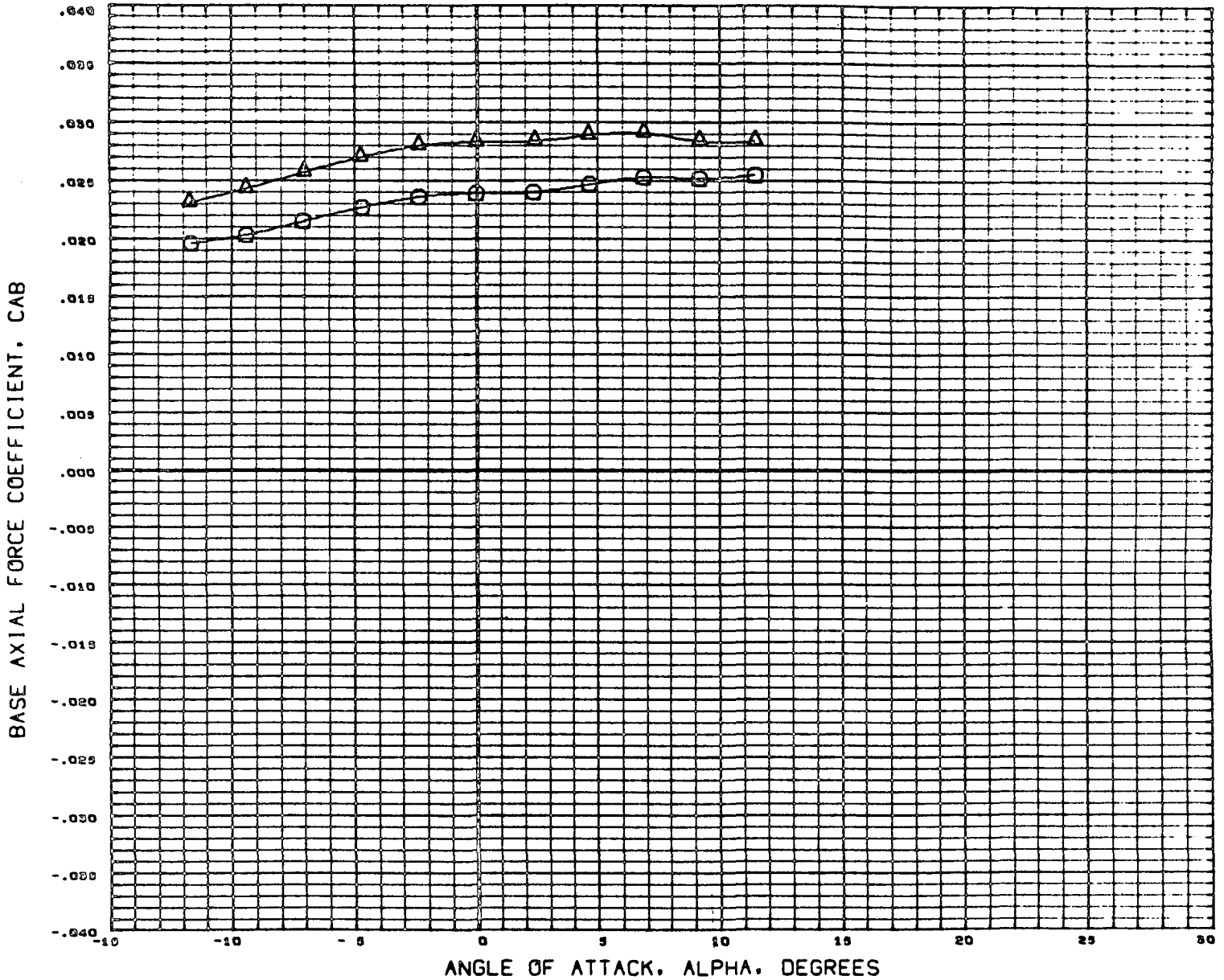
ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRF	0.0000	
YMRF	0.0000	
ZMRF	0.0000	
SCALE	0.0033	SCALE

MACH .99

PAGE 379

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

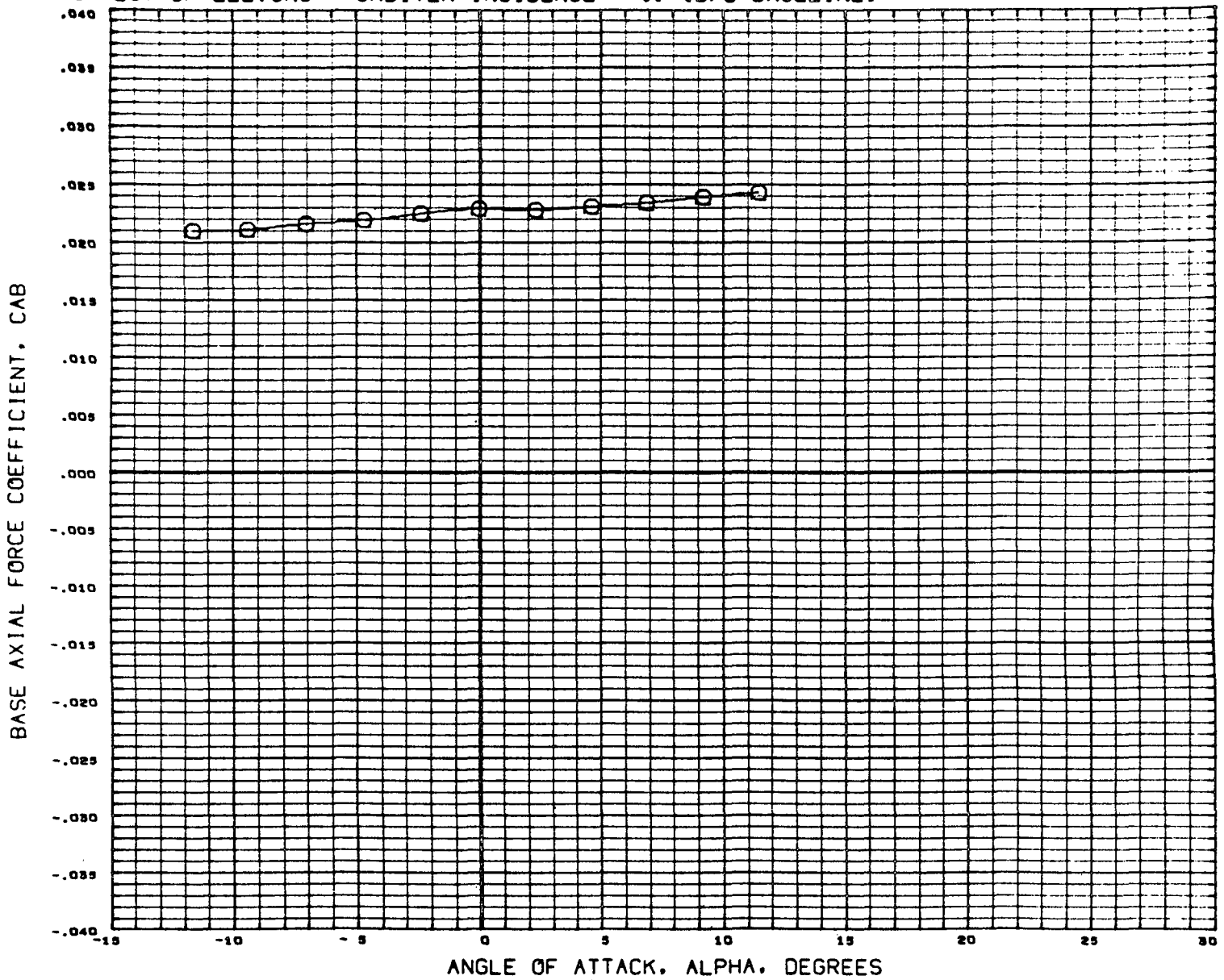


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(H3251B)	M3PC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH

1.10

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H32515) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000



REFERENCE INFORMATION		
SREF	15.6360	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.19

PAGE 381

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H32903)  MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17
 (H32515)  MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

ORBINC POSITN BETA ELVATR
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 0.000 4.000 0.000 10.000

REFERENCE INFORMATION
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 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.46

PAGE 382

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(H32505)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(H32513)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.96

PAGE 383

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H32915)  DATA NOT AVAILABLE FOR ALL CONDITIONS

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0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 2.99

PAGE 384

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H32903)  M3FC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (H32513)  DATA NOT AVAILABLE FOR ALL CONDITIONS

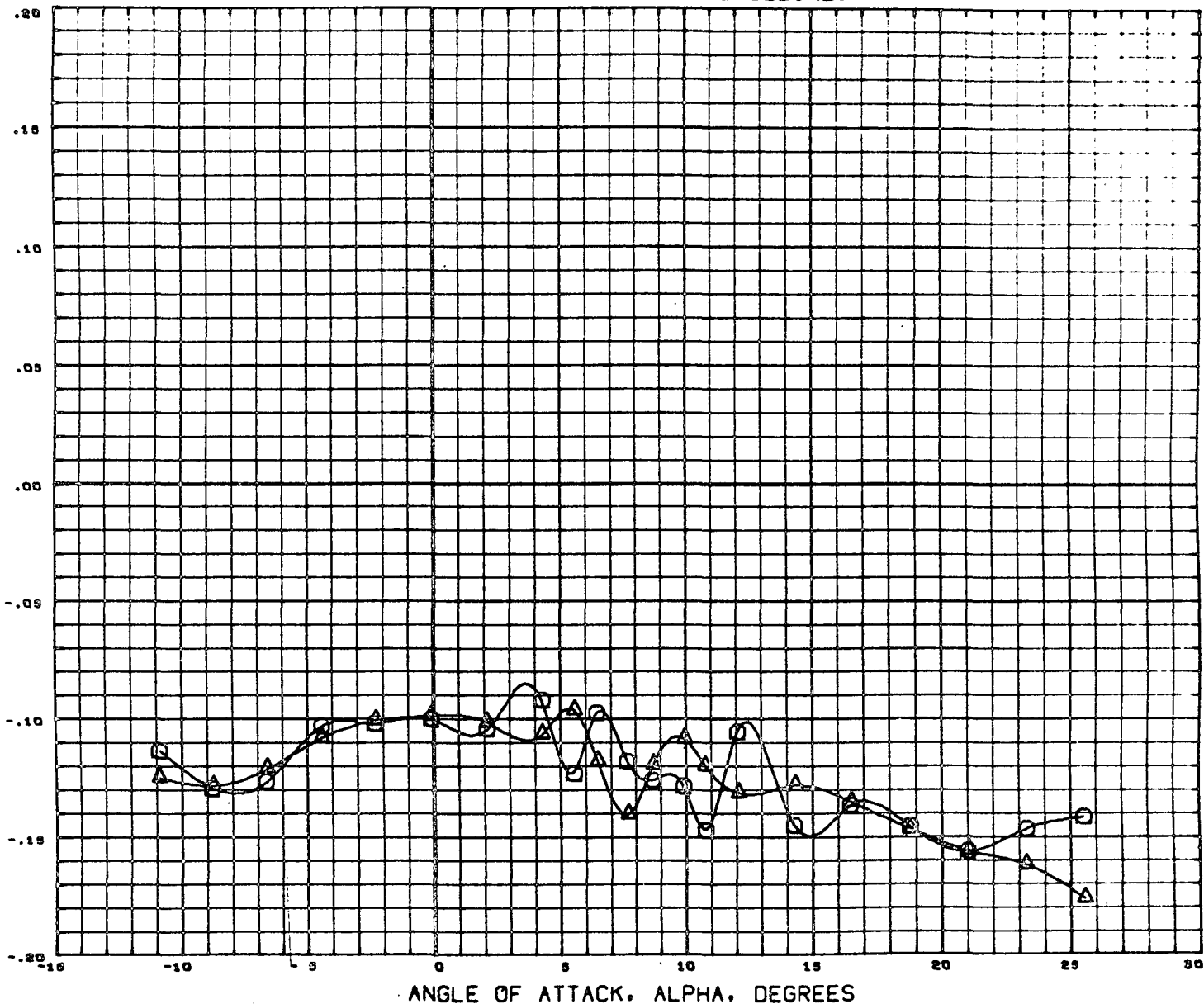
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				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 4.96

PAGE 385

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



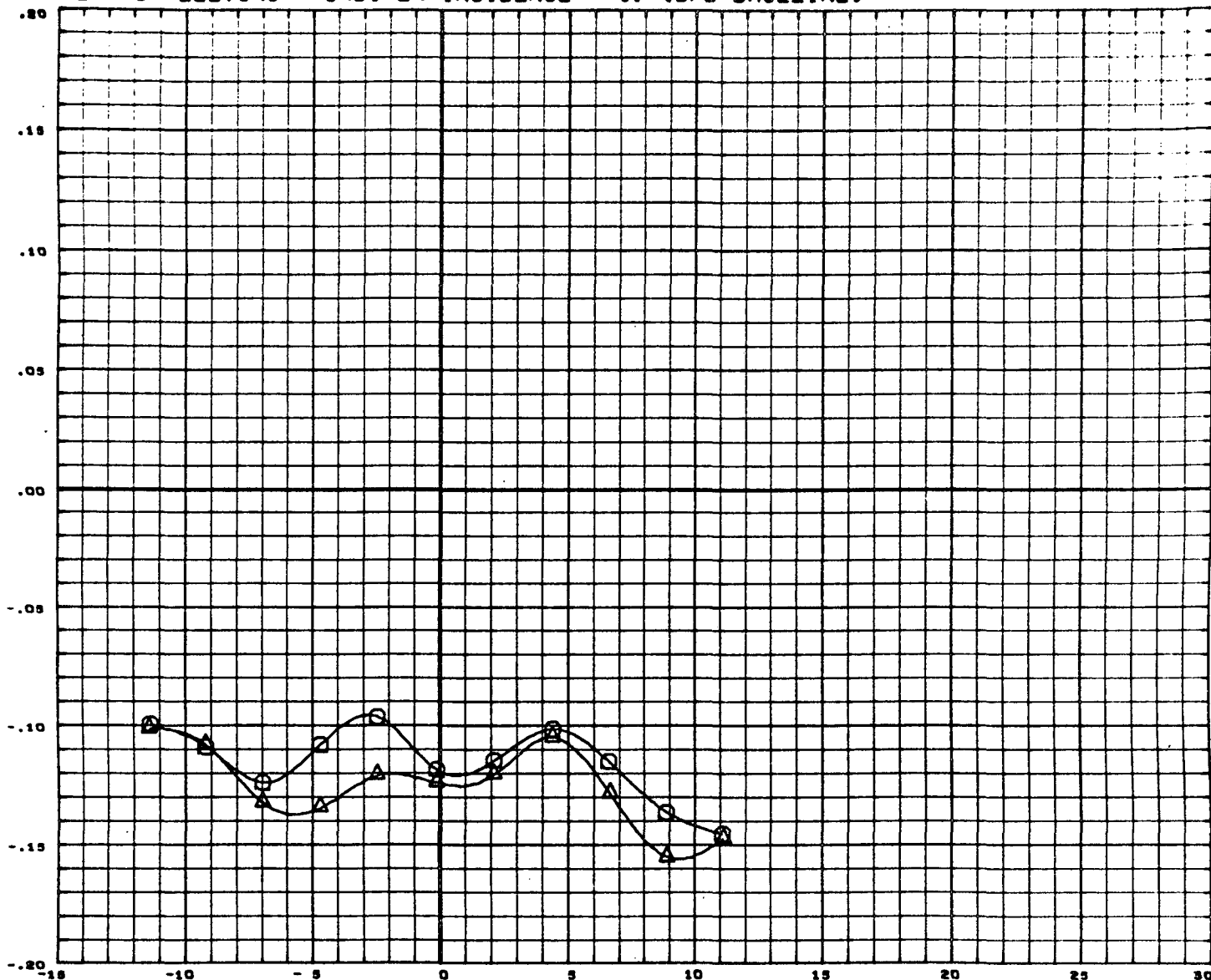
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						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

PAGE 386

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

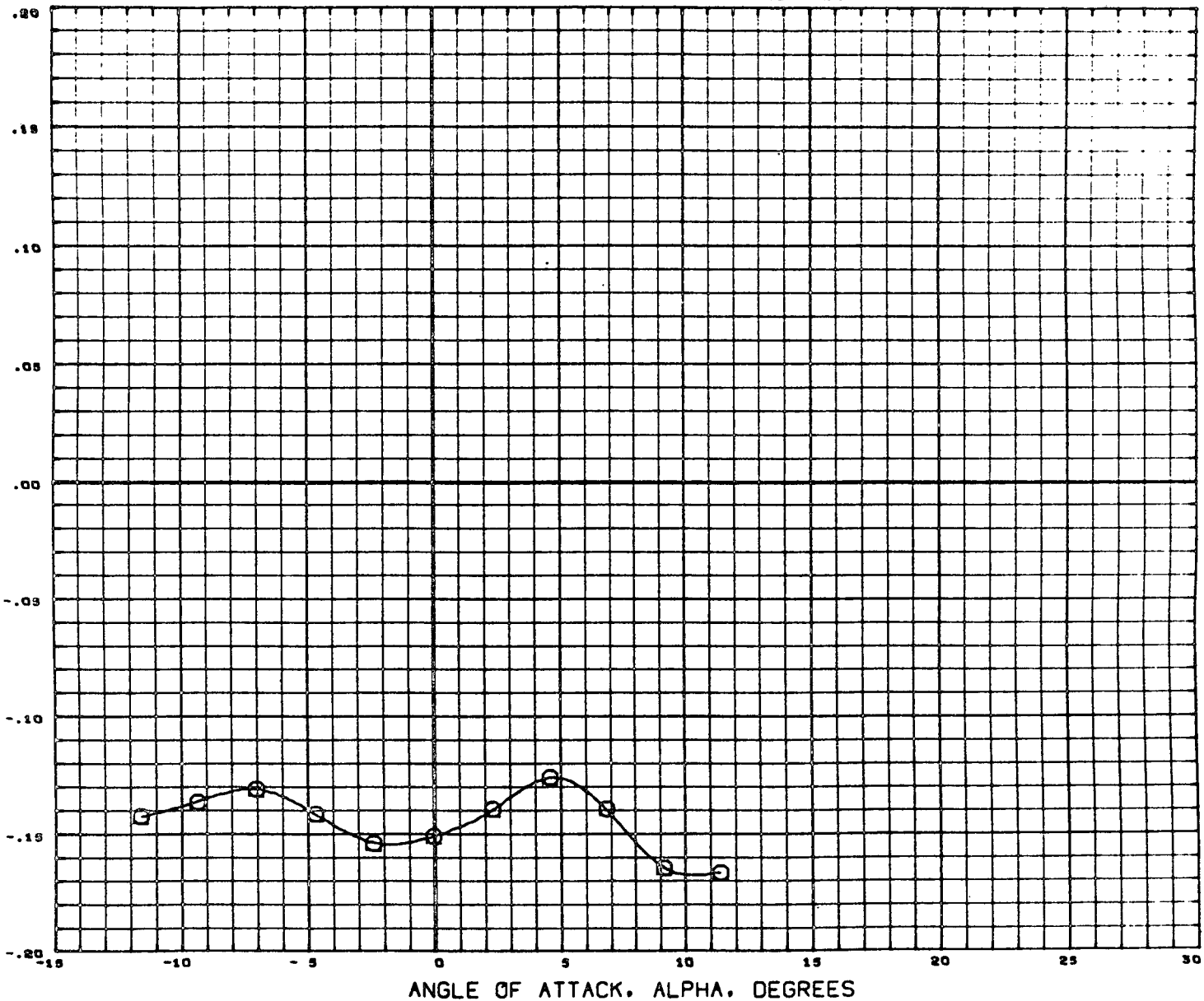
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						XMFP	0.0000
						YMFP	0.0000
						ZMFP	0.0000
						SCALE	0.0035 SCALE

MACH .90

PAGE 387

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (J32915)  DATA NOT AVAILABLE FOR ALL CONDITIONS

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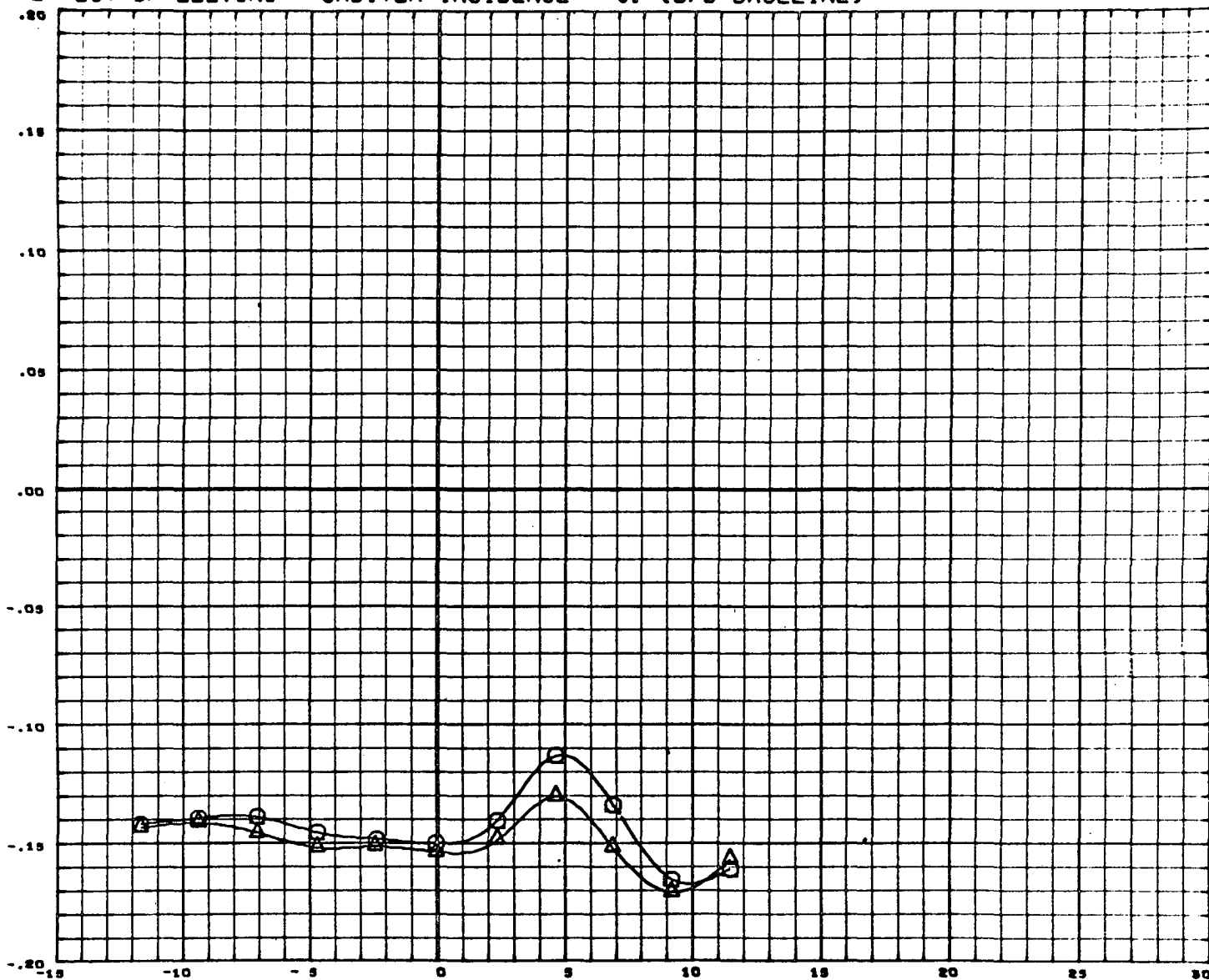
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BREF	6.0990 INCHES
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YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH .99

PAGE 388

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL

CONFIGURATION DESCRIPTION

(J32503)
(J32513)



MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17
MSFC490 NR/GD LAUNCH B20C4BW14V8+BSW17V17

ORBIT INC

POSITN

BETA

ELVATR

REFERENCE INFORMATION

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0.000 4.000 0.000 10.000

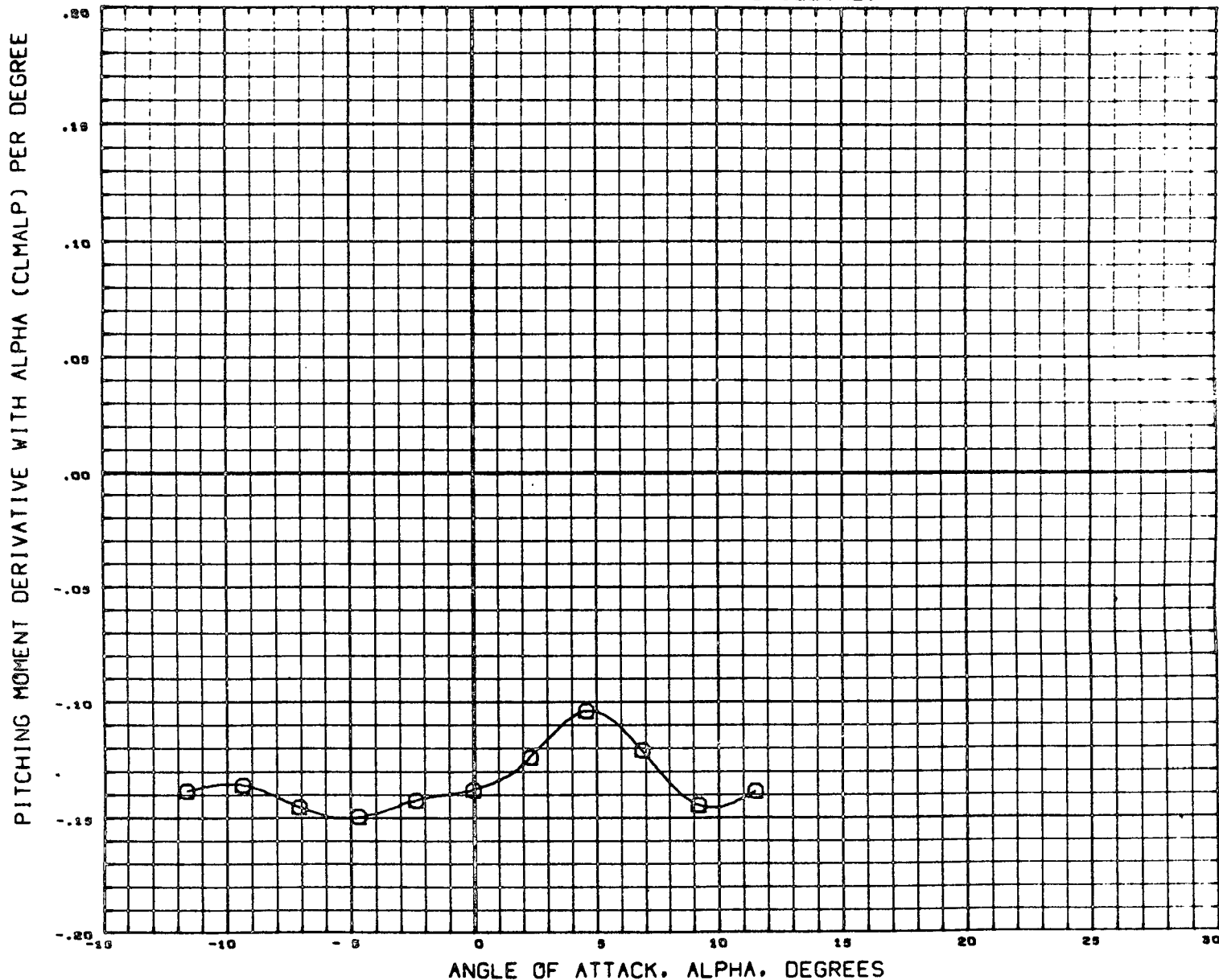
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ZMRP 0.0000
SCALE 0.0035 SCALE

MACH

1.10

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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(J32515) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC POSITN BETA ELVATR
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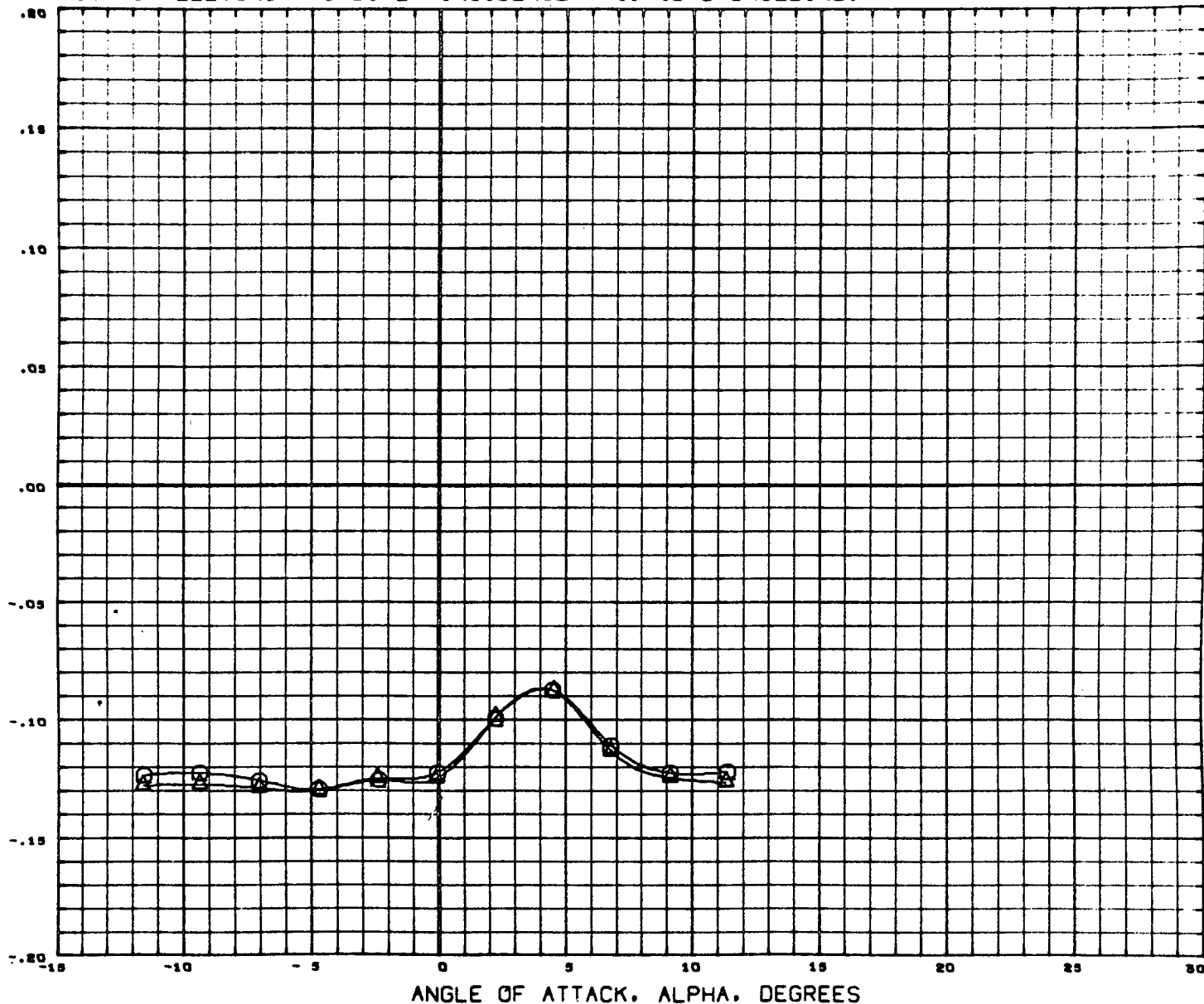
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YMRP 0.0000
ZMRP 0.0000
SCALE 0.0035 SCALE

MACH 1.19

PAGE 390

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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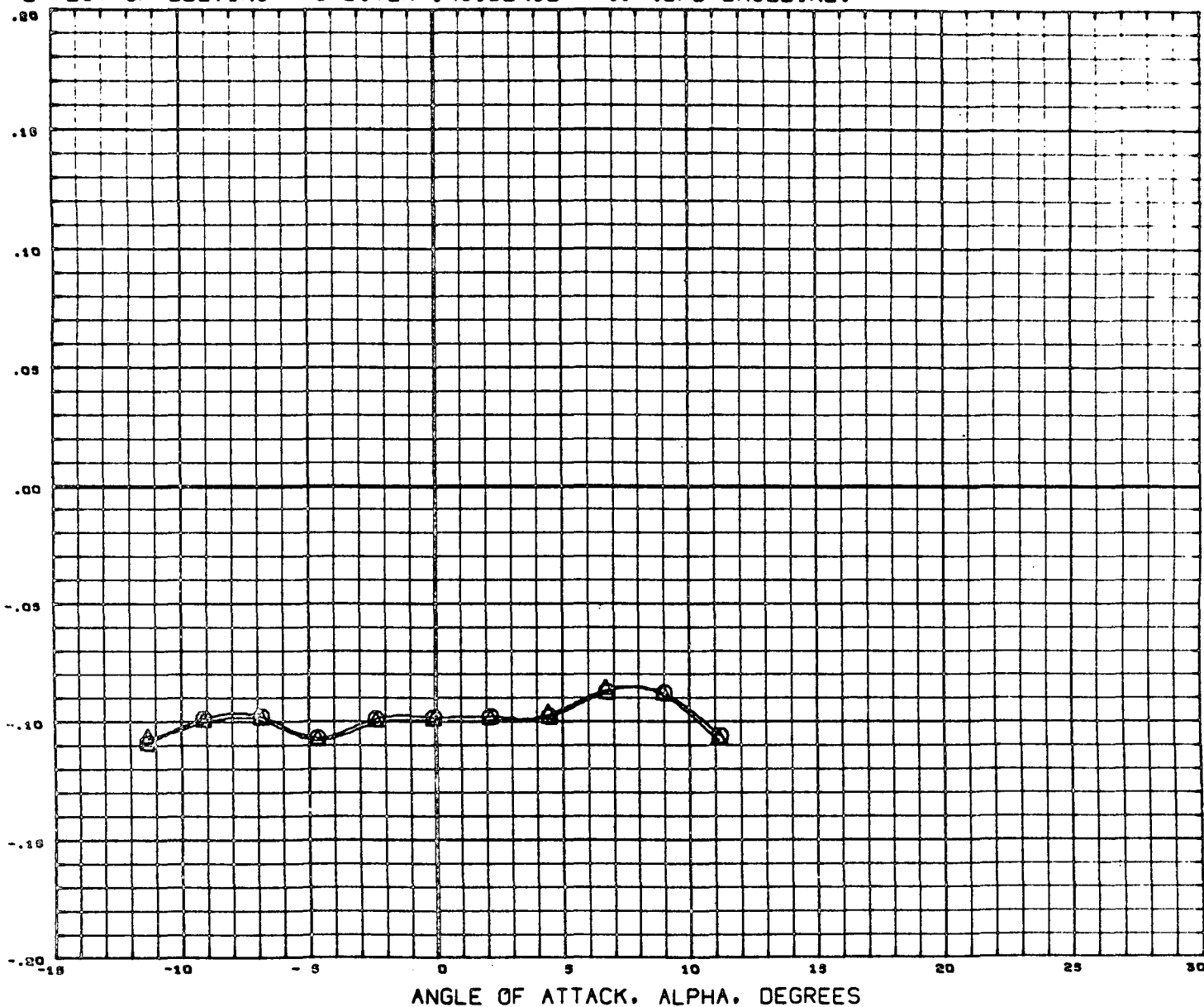
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				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.46

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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(J32918)	MSFC490 NR/GD LAUNCH 820C48W14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

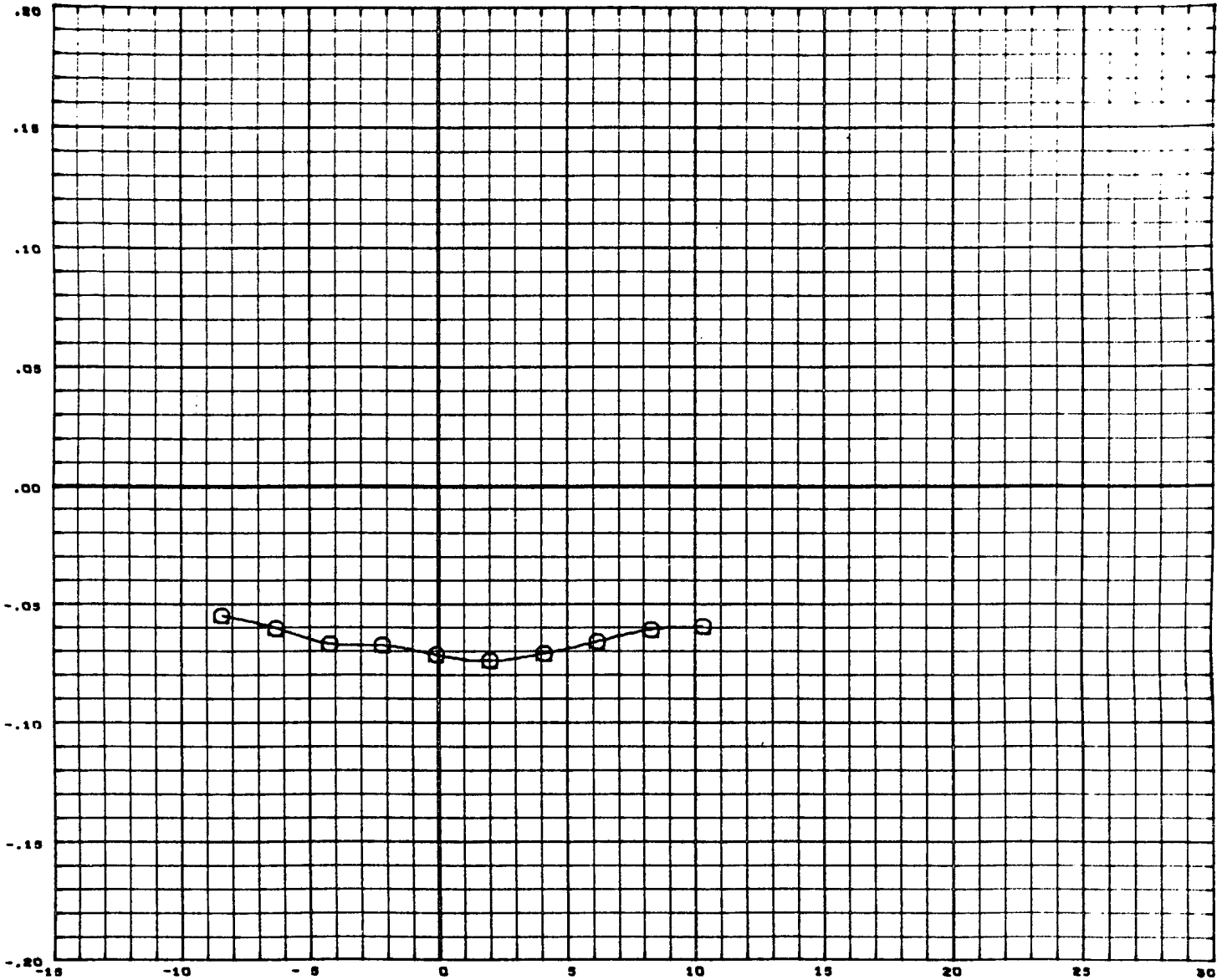
MACH

1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



ANGLE OF ATTACK, ALPHA, DEGREES

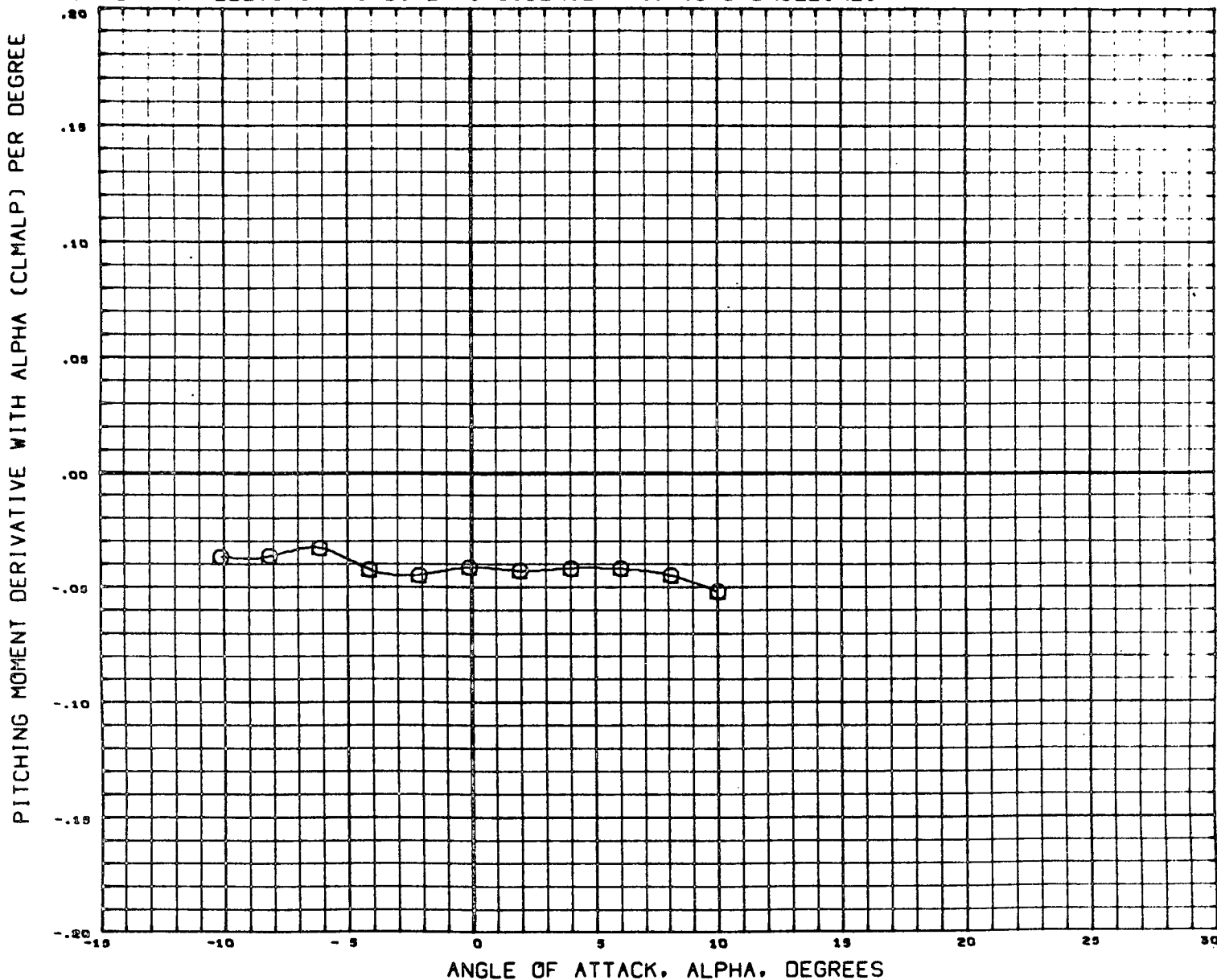
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 (J32503) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (J32513) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 2.99

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (J32903) H3PC490 NR/CD LAUNCH B20C48W14V8+B5W17V17
 (J32518) DATA NOT AVAILABLE FOR ALL CONDITIONS

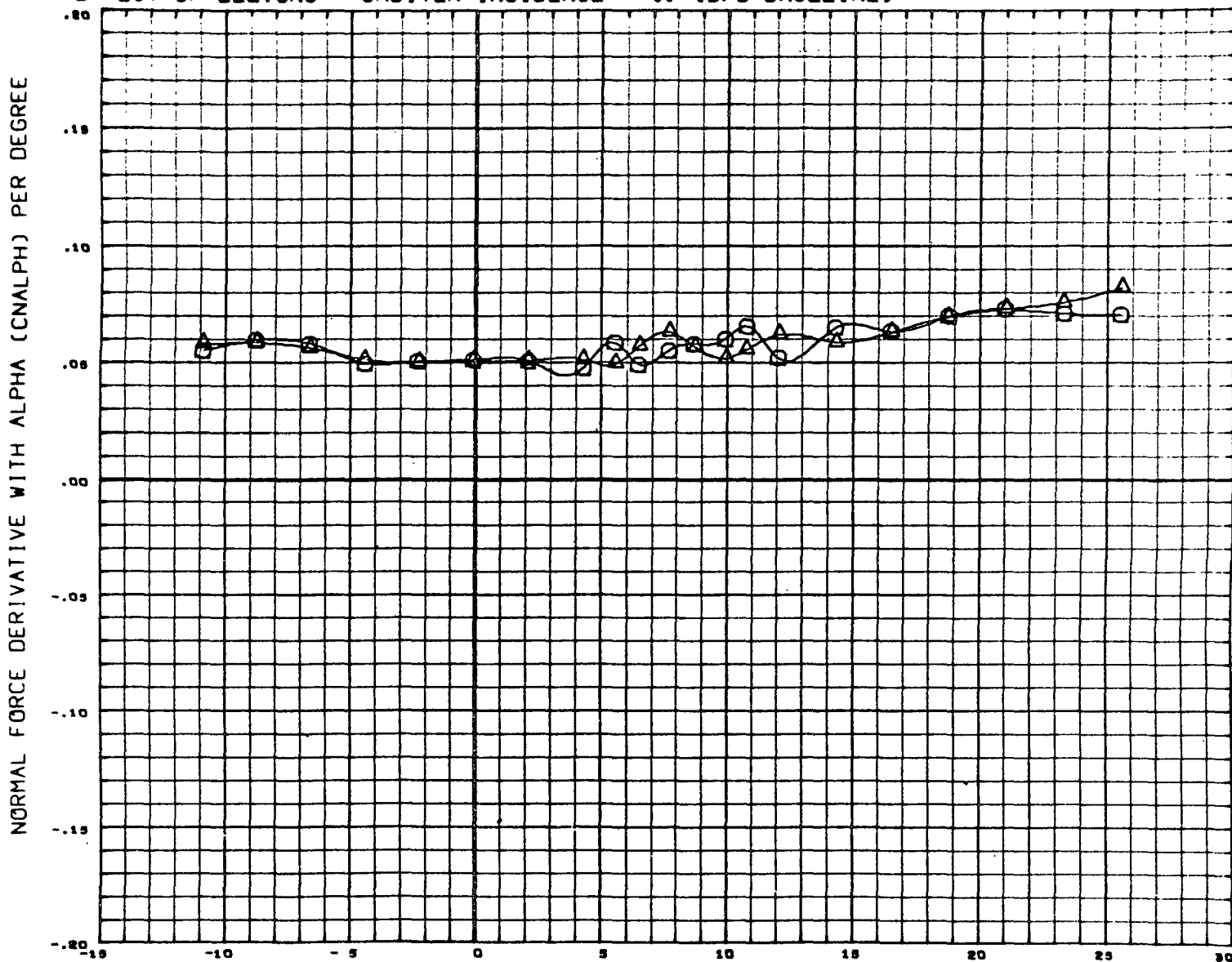
ORBINC POSITN BETA ELVATR
 0.000 4.000 0.000 0.000
 0.000 4.000 0.000 10.000

REFERENCE INFORMATION
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 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 4.96

PAGE 394

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3250S)	MSPC490 NR/GD LAUNCH B20C48W14V8+B35W17V17
(J3251S)	MSPC490 NR/GD LAUNCH B20C48W14V8+B35W17V17

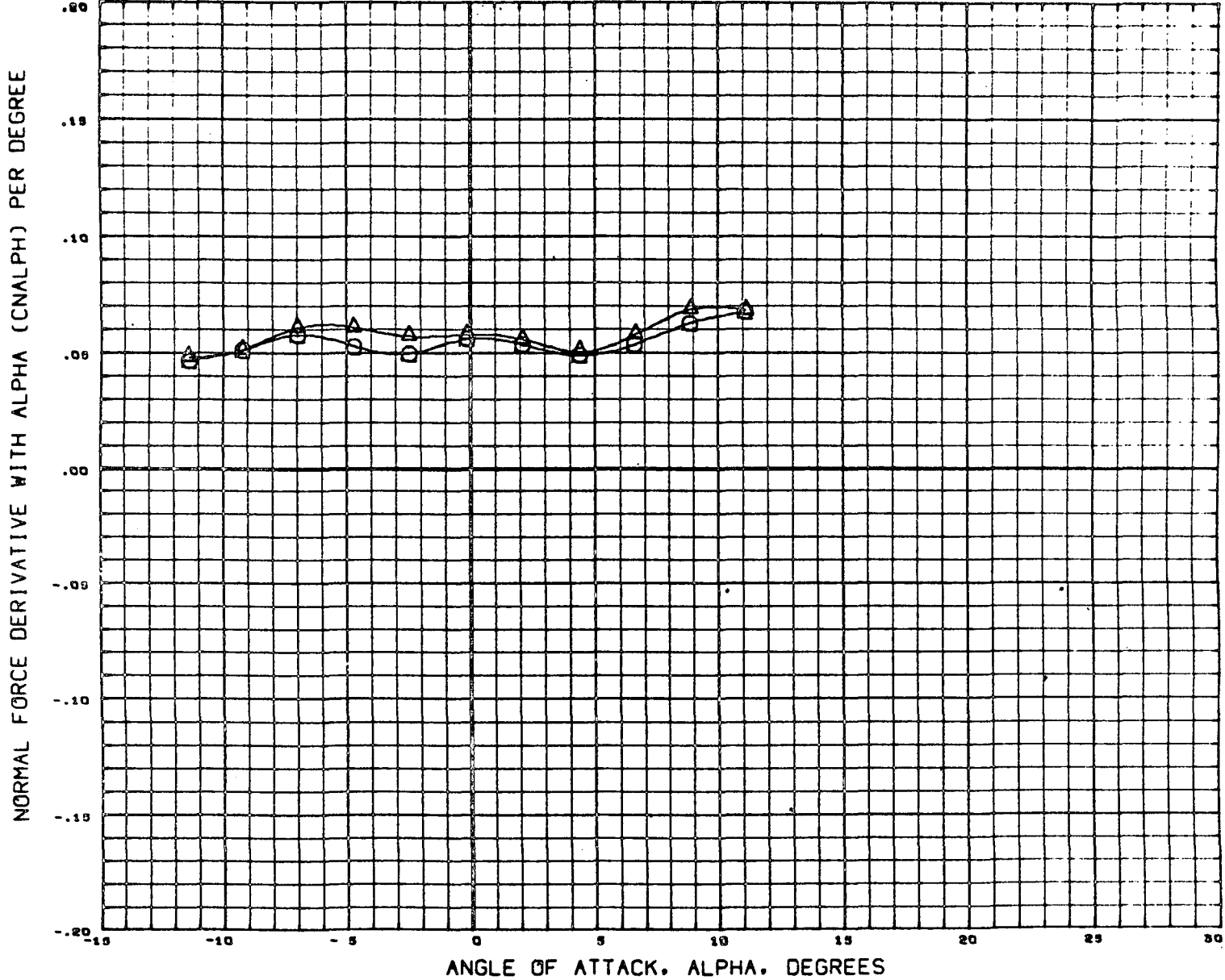
ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH .60

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBITER	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(J32505)	M3FC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.8360 SQ IN
(J32513)	M3FC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



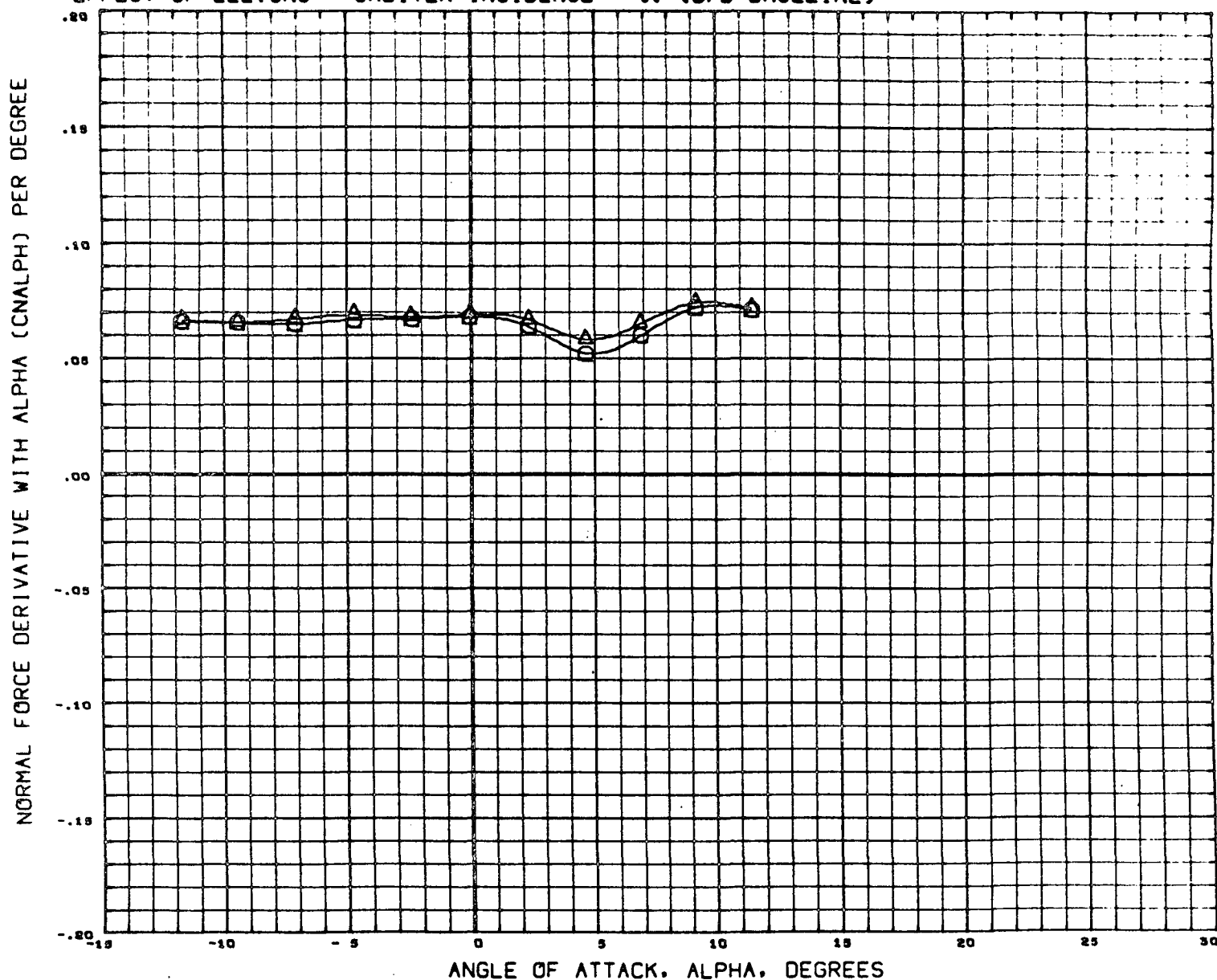
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ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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0.000	4.000	0.000	10.000	LREF	3.0930 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH .99

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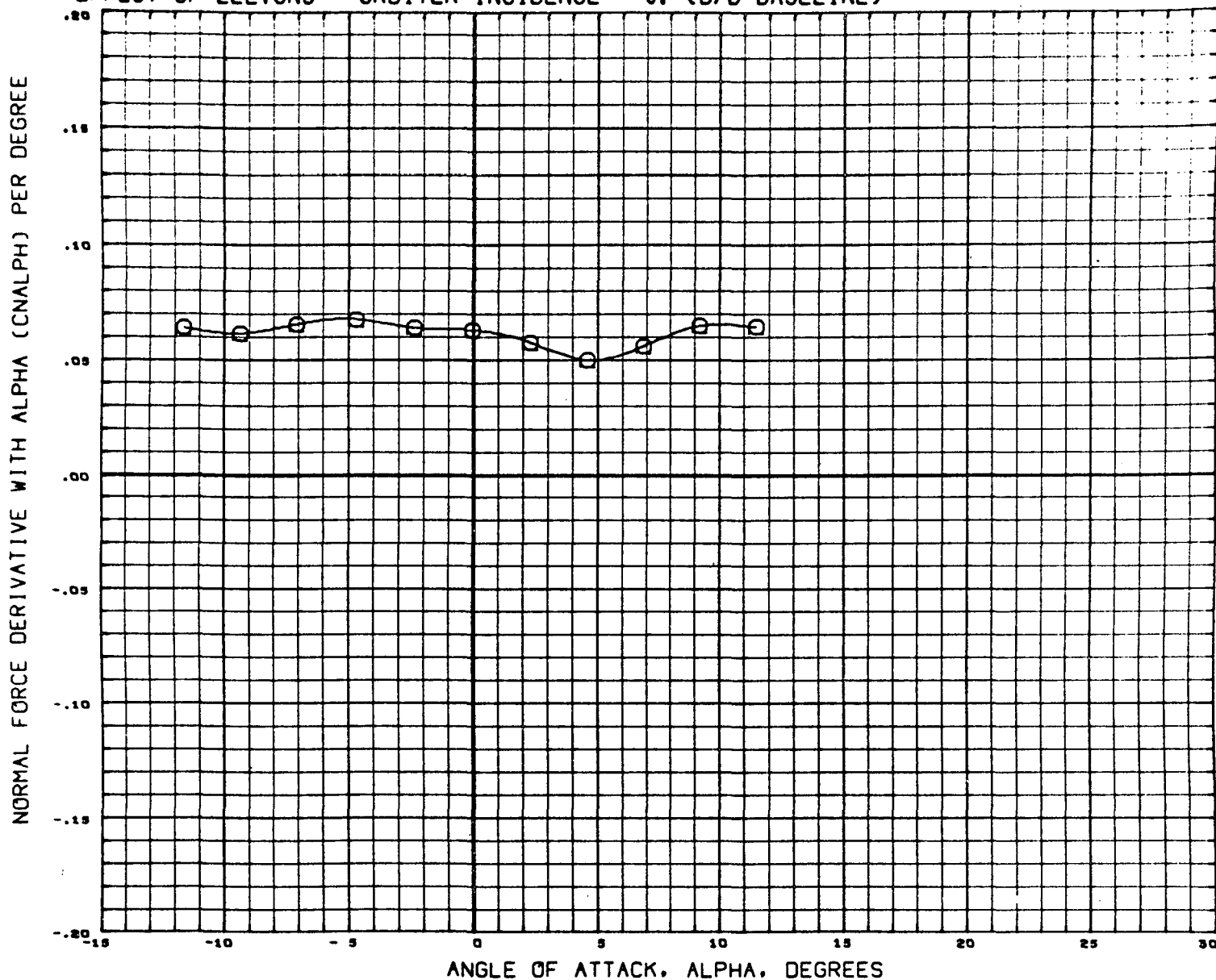
EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(J3290S)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
(J3291S)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (J32513) DATA NOT AVAILABLE FOR ALL CONDITIONS

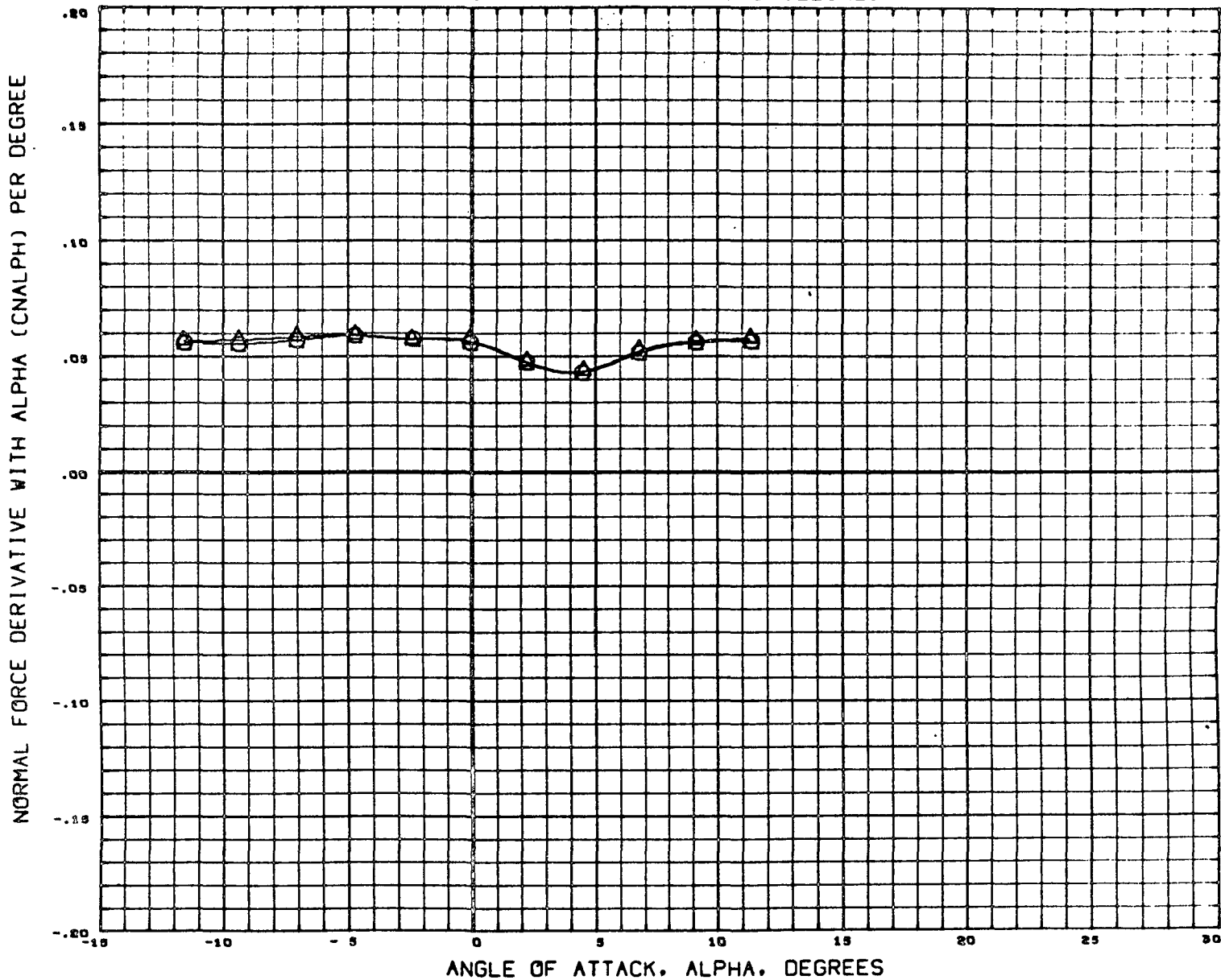
ORBINC POSITN BETA ELVATR
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 0.000 4.000 0.000 10.000

REFERENCE INFORMATION
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 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.19

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J32905)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(J32919)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

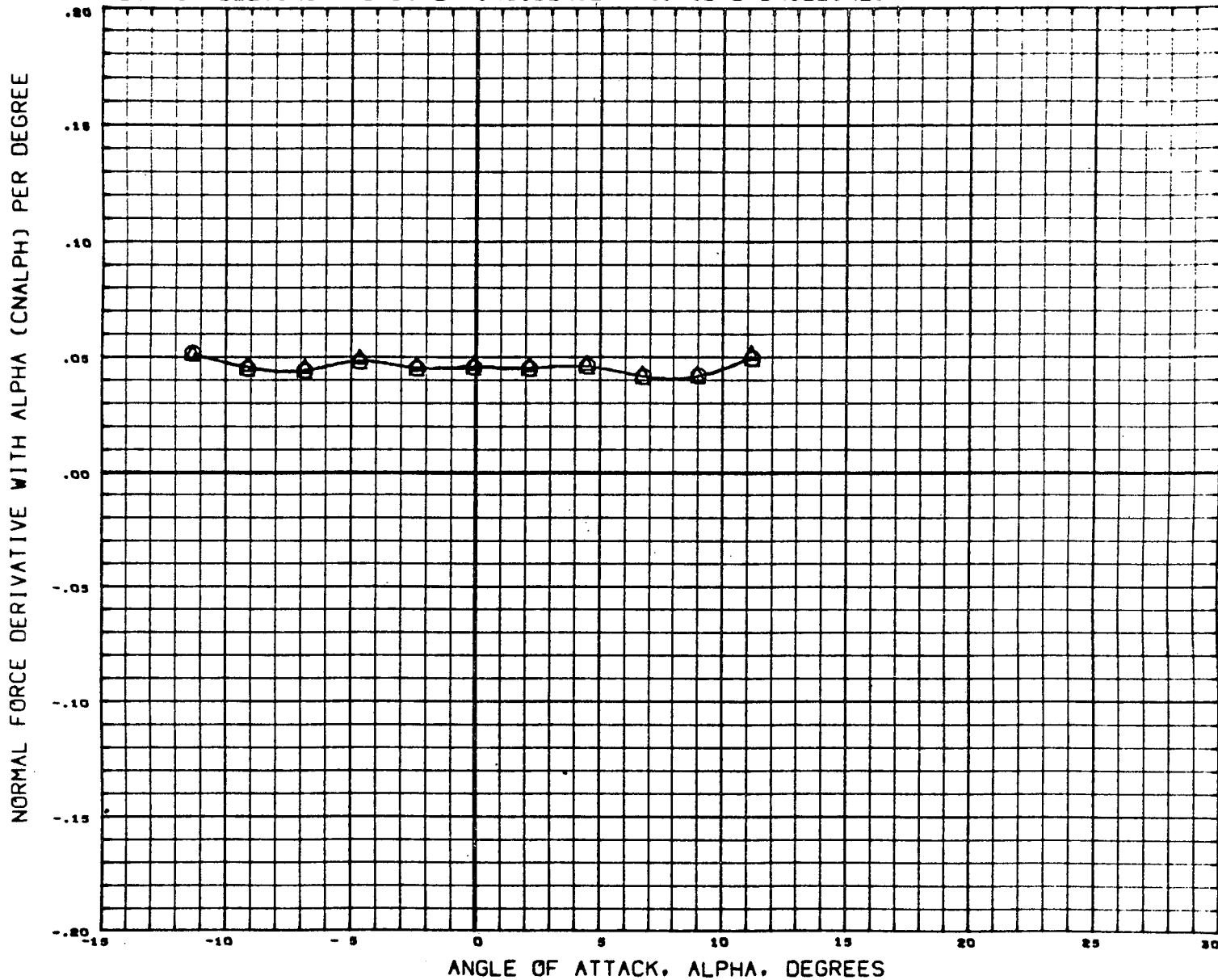
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BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH

1.46

PAGE 400

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



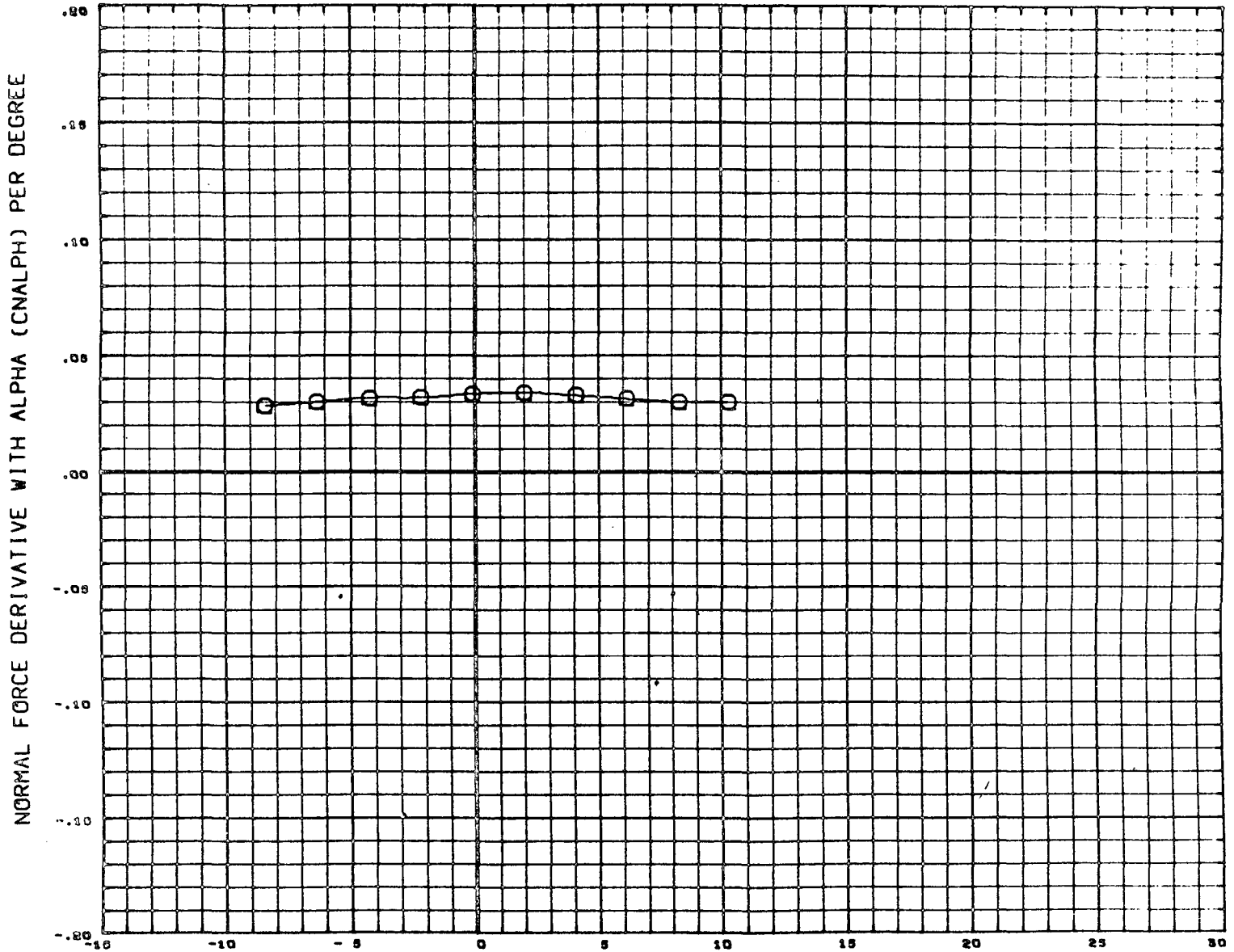
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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(J32513)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.6560 30 IN
0.000	4.000	0.000	10.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.96

PAGE 401

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



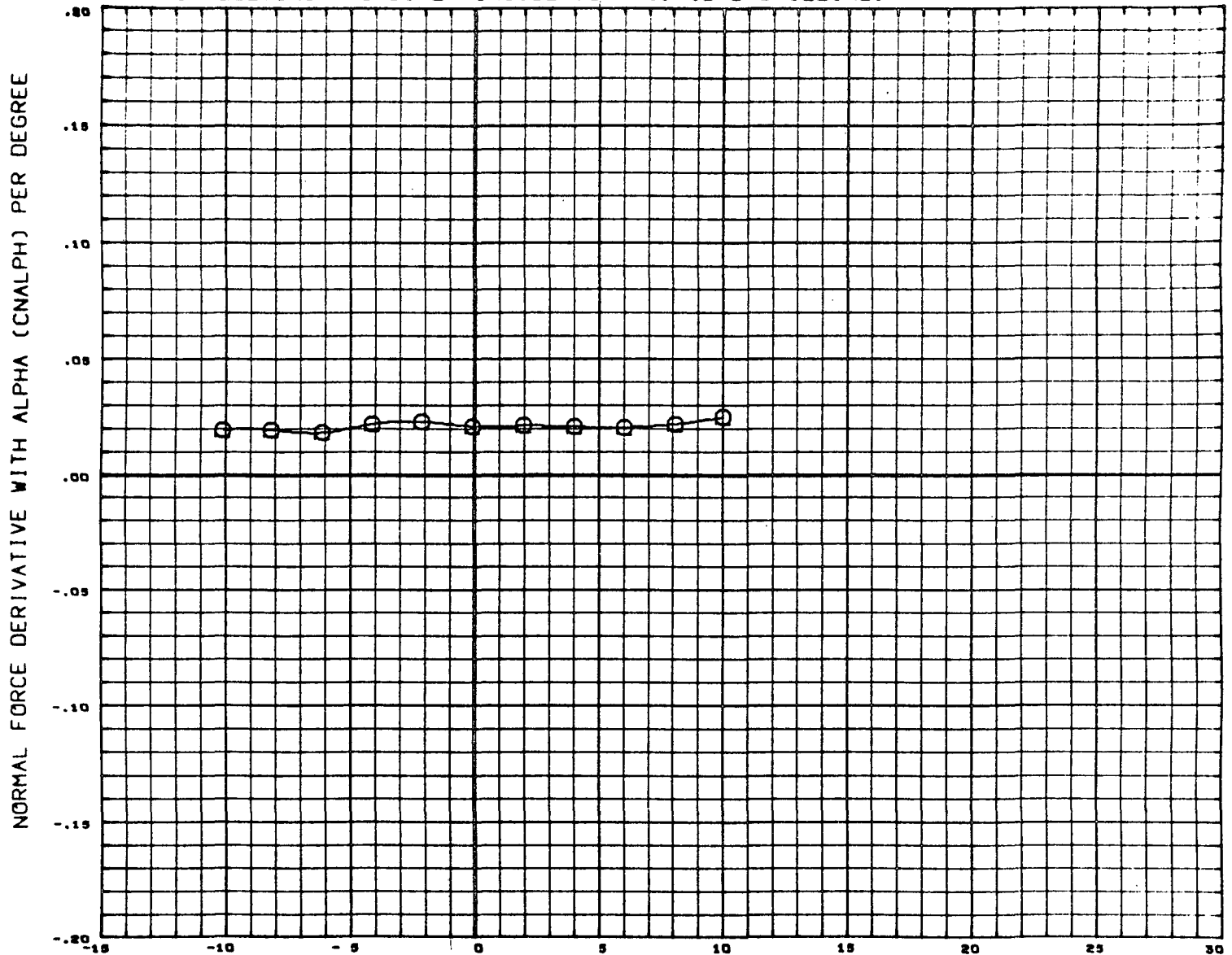
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(J32915) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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0.000	4.000	0.000	10.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 2.99

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (J32513) DATA NOT AVAILABLE FOR ALL CONDITIONS

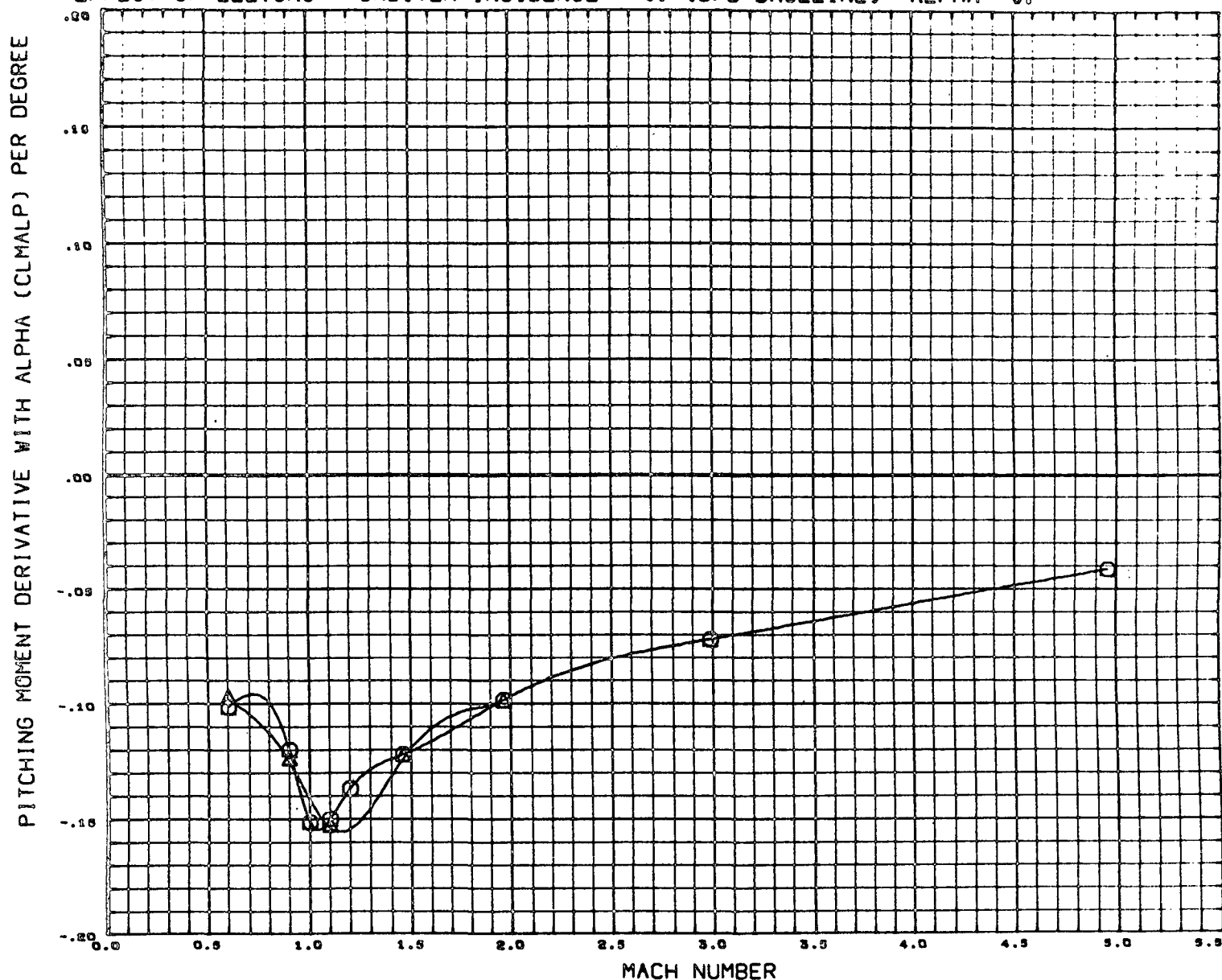
ORBINC	POSITN	BETA	ELVATR
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0.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

MACH 4.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE) ALPHA = 0.

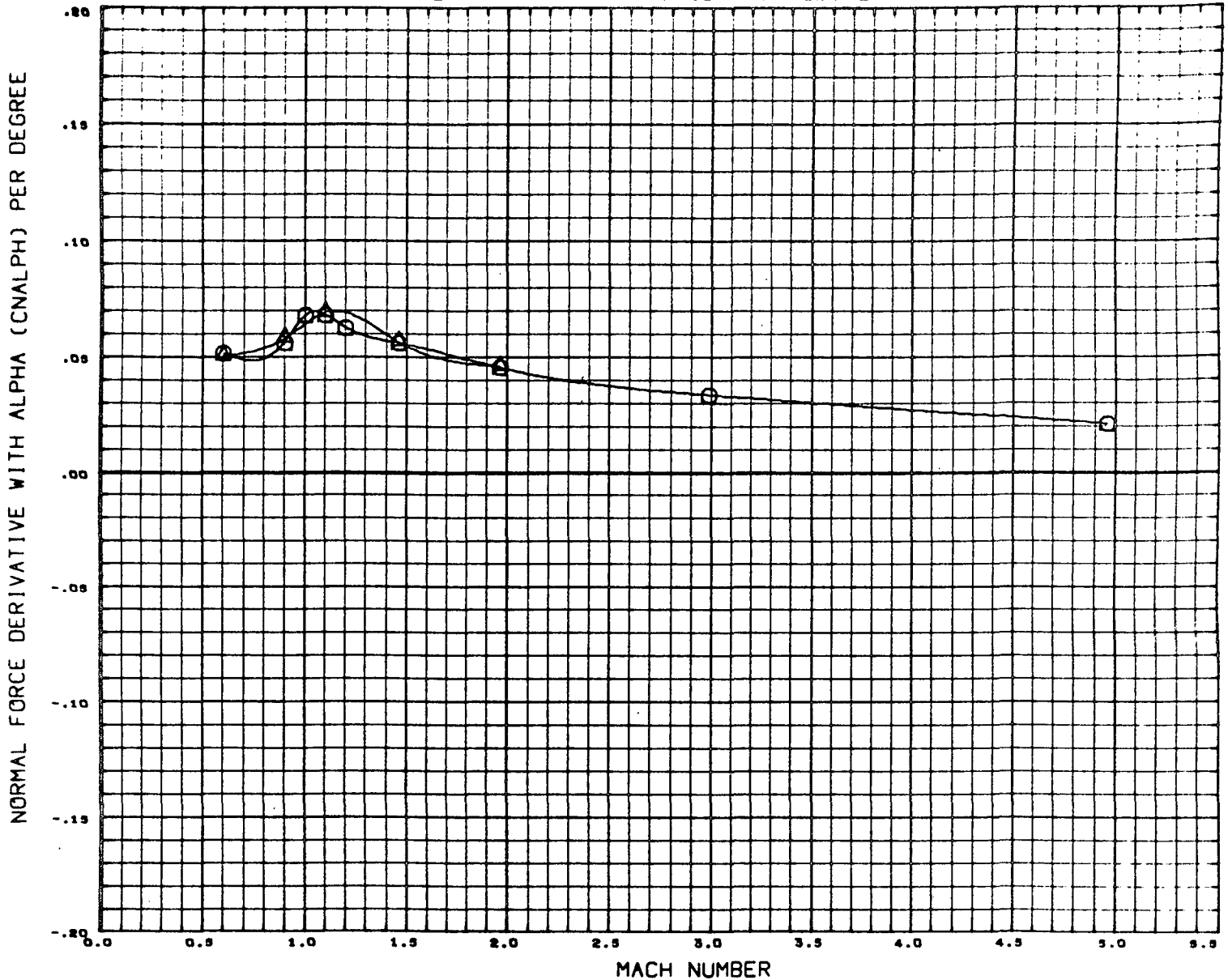


DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (N3251A) M5PC400 NR/GD LAUNCH 820C48W14V8+B5W17V17

ORBITN	POSITN	BETA	ELVATR	REFERENCE INFORMATION
0.000	4.000	0.000	0.000	SREF 15.0560 SQ IN
0.000	4.000	0.000	10.000	LREF 3.0990 INCHES
				BREF 6.0990 INCHES
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				ZMRF 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE) ALPHA = 0.



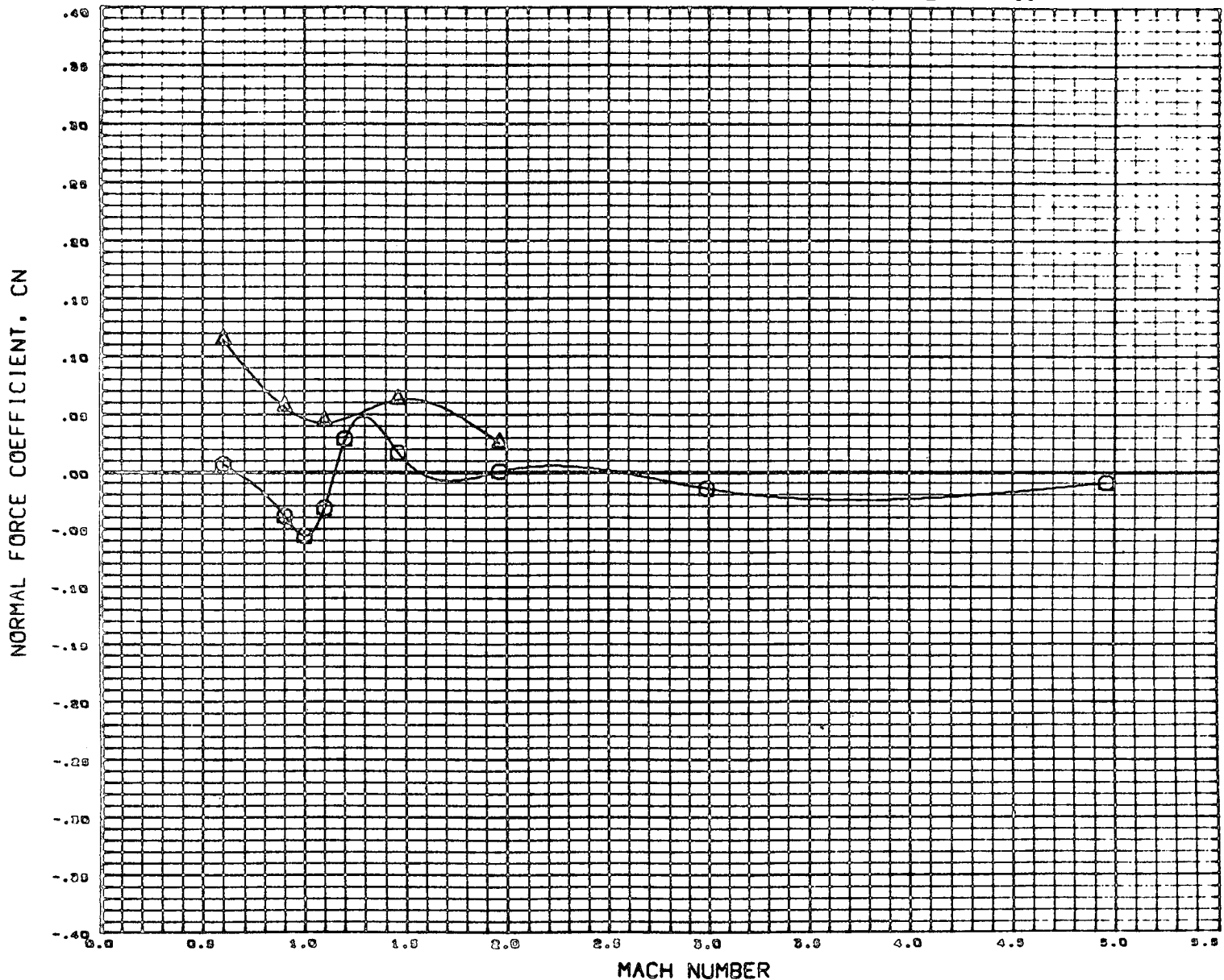
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ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRF	0.0000
				YMRF	0.0000
				ZMRF	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE) ALPHA = 0.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (U9250A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (L3251A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

MACH NUMBER

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE) ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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(L3251A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17

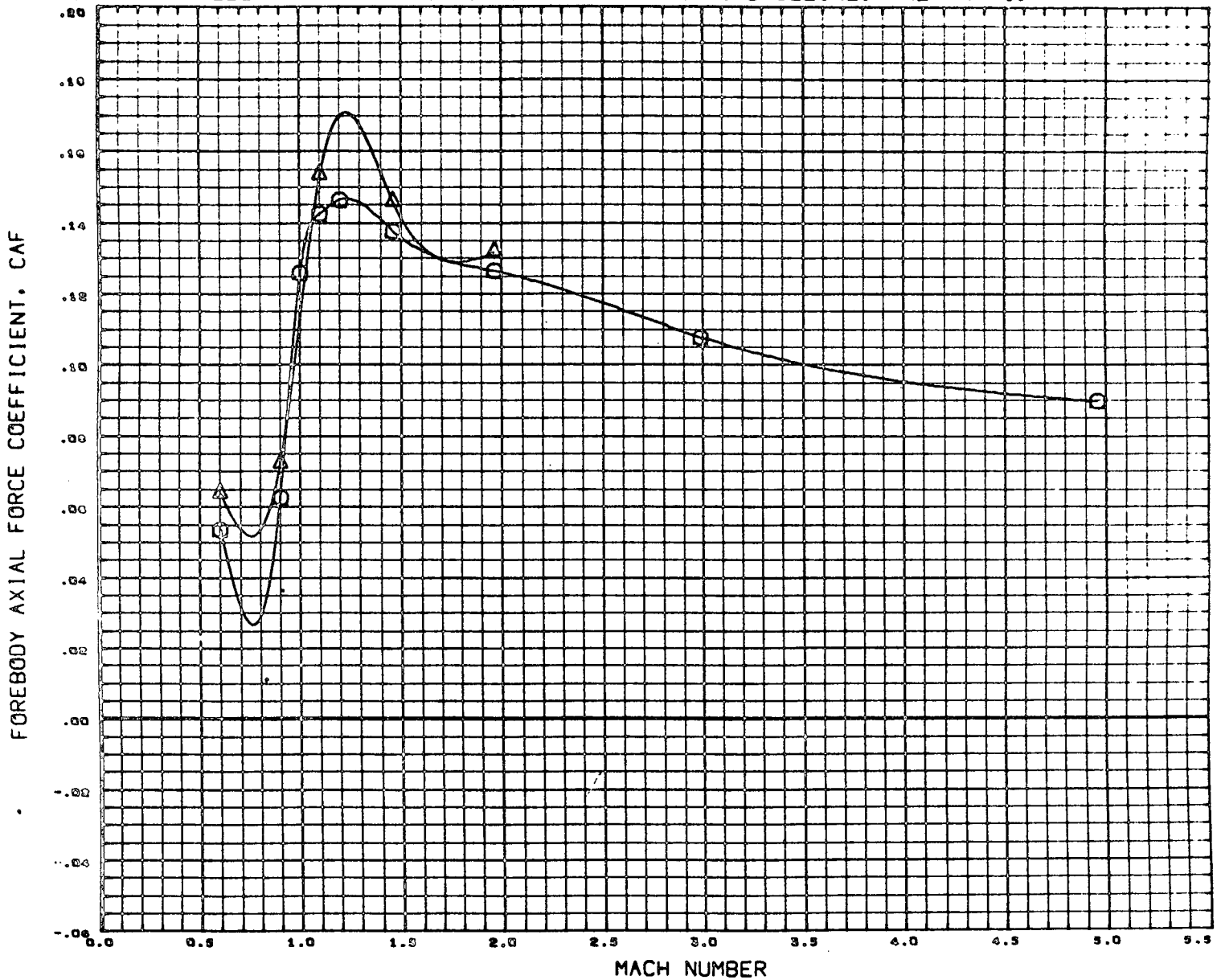
MACH NUMBER

ORBIT INC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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				BREF 6.0990 INCHES
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				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 0. (B/B BASELINE) ALPHA = 0.



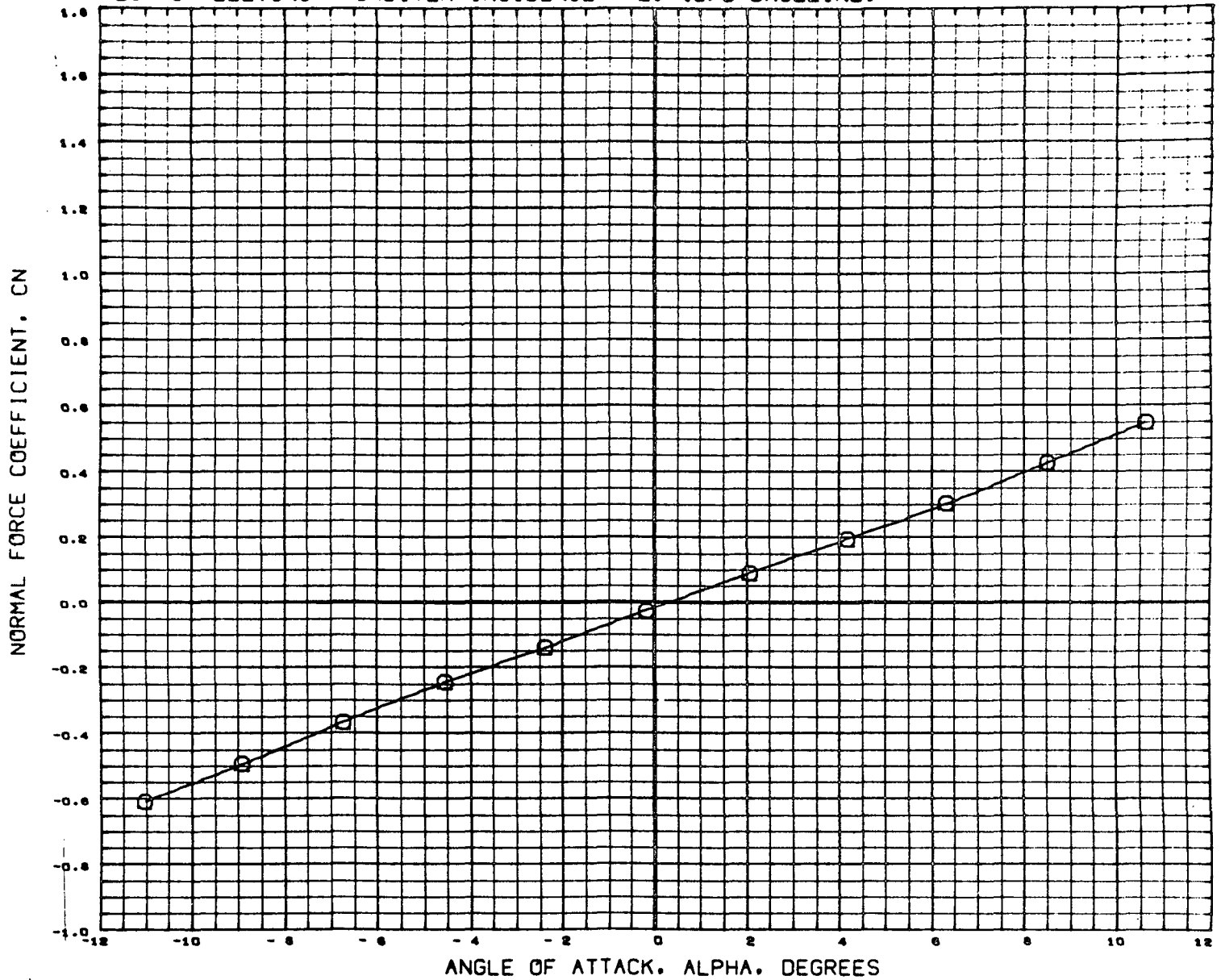
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MACH NUMBER

ORBIT INC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
0.000	4.000	0.000	0.000	SREF	15.6580 SQ IN
0.000	4.000	0.000	10.000	LREF	3.0850 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



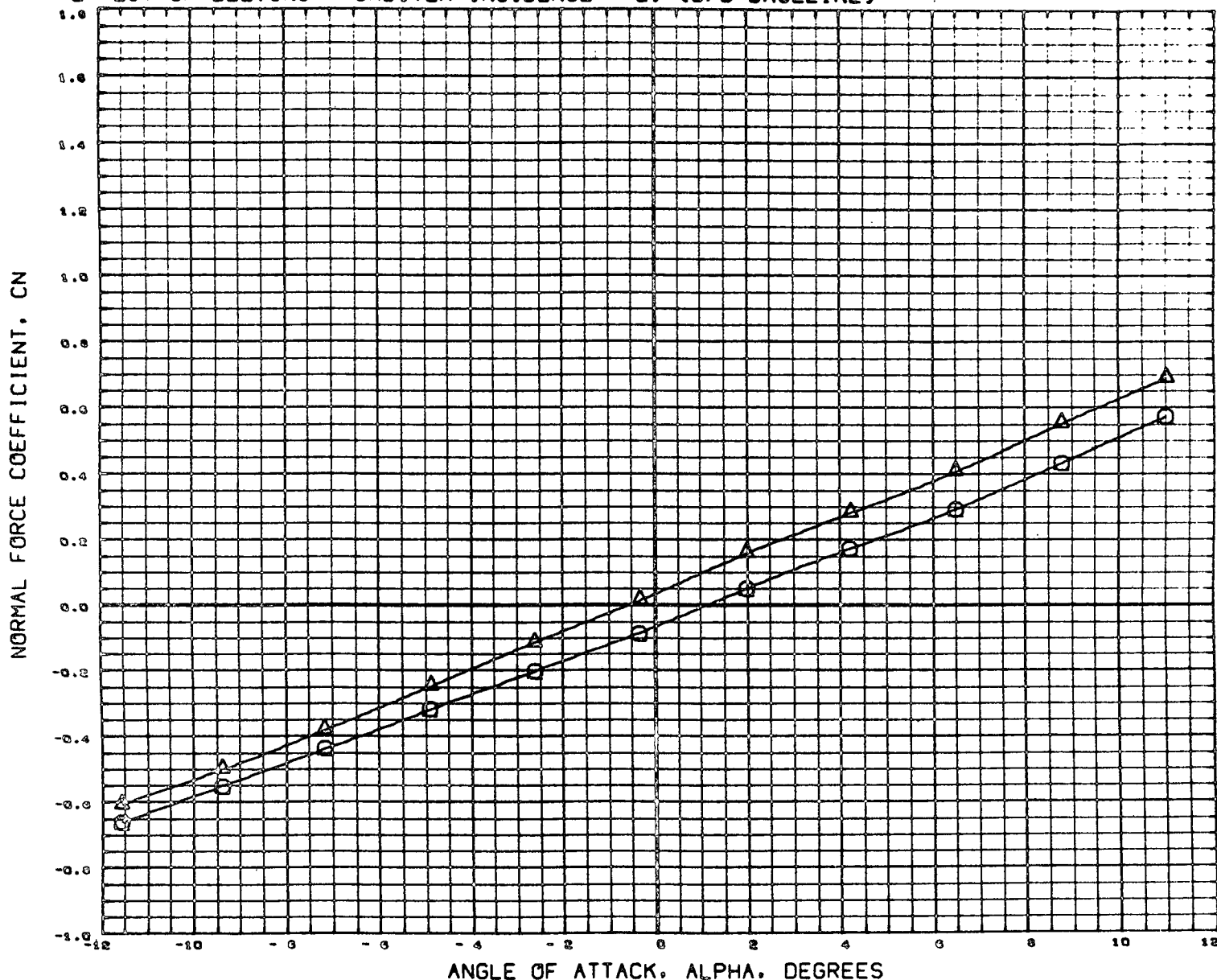
DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3253A) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
2.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE


MACH .60

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(H3292A)  MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

(H3293A)  MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	10.000

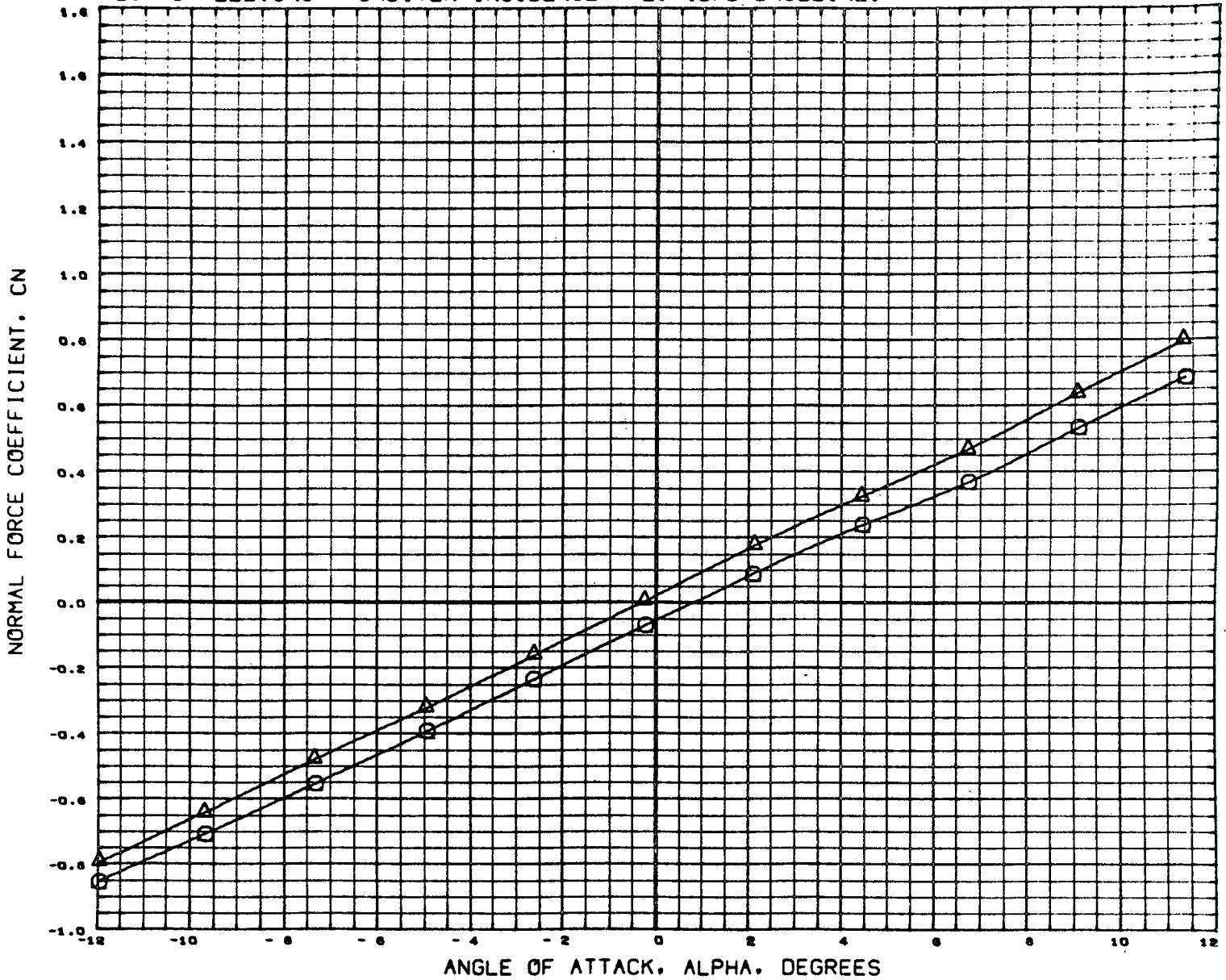
REFERENCE INFORMATION

SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH .90

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)

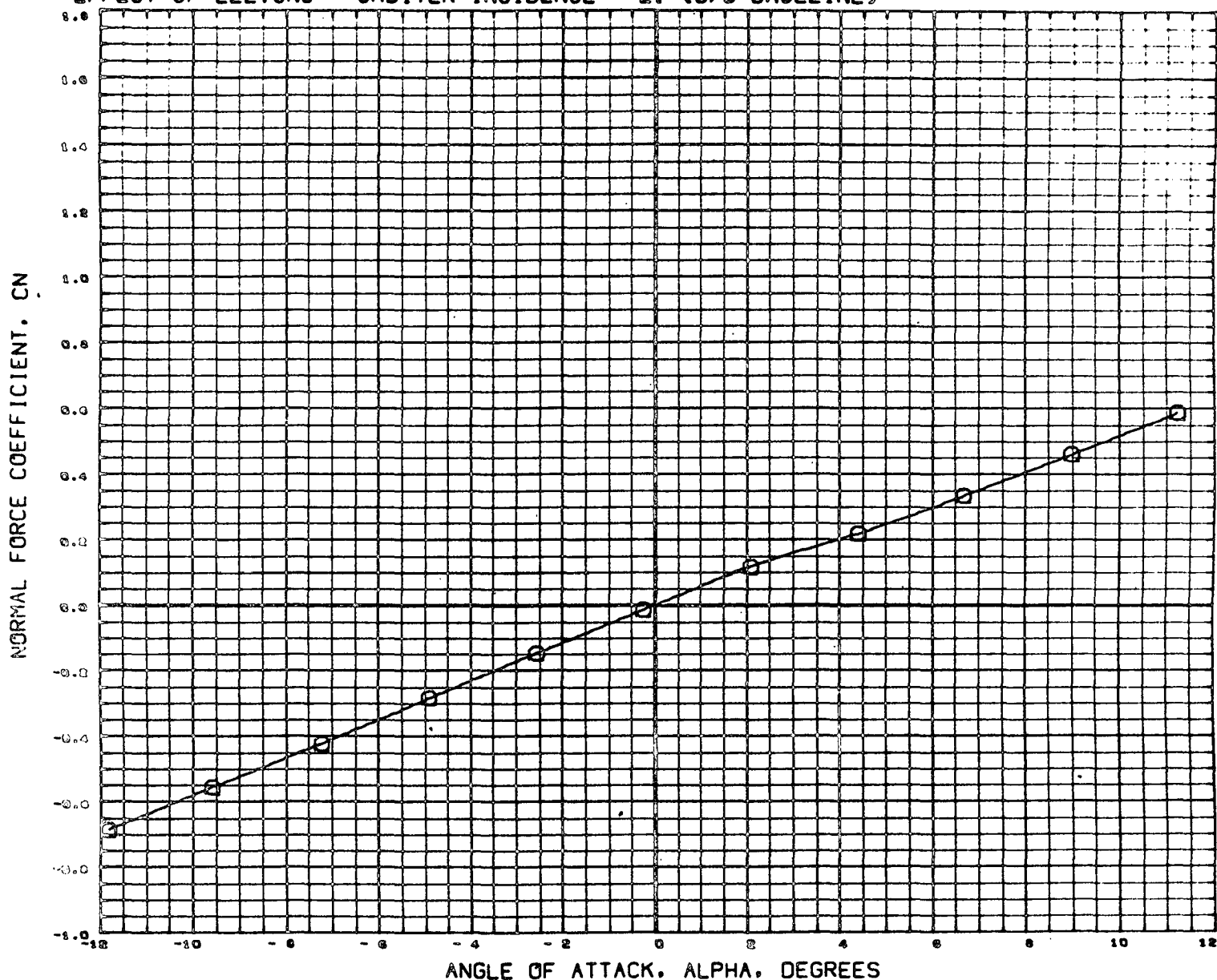


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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(H3253A)	MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17	2.000	4.000	0.000	10.000	LREF	3.0930 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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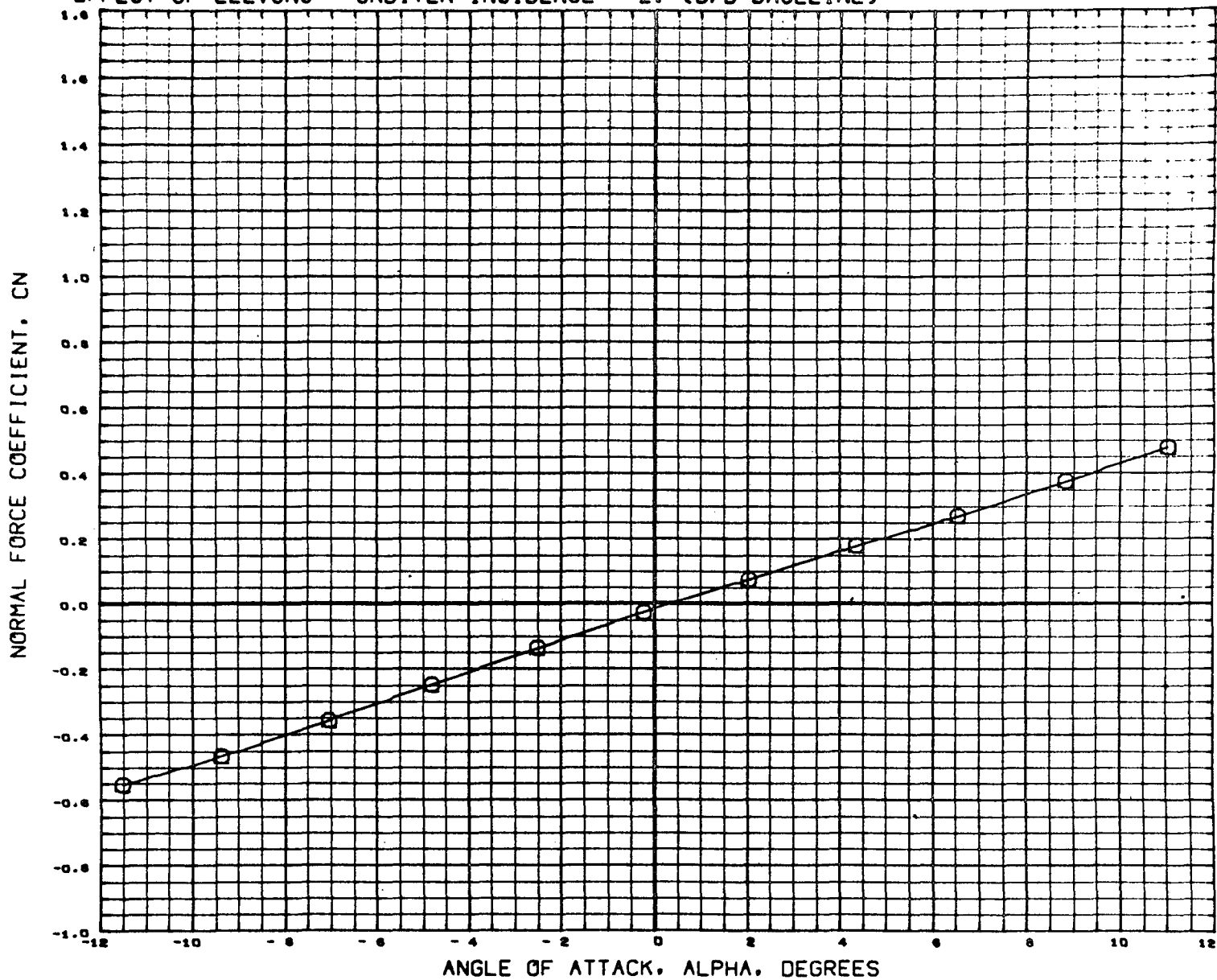
ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6360	30 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRF	0.0000	
YMRF	0.0000	
ZMRF	0.0000	
SCALE	0.0035	SCALE

MACH 1.45

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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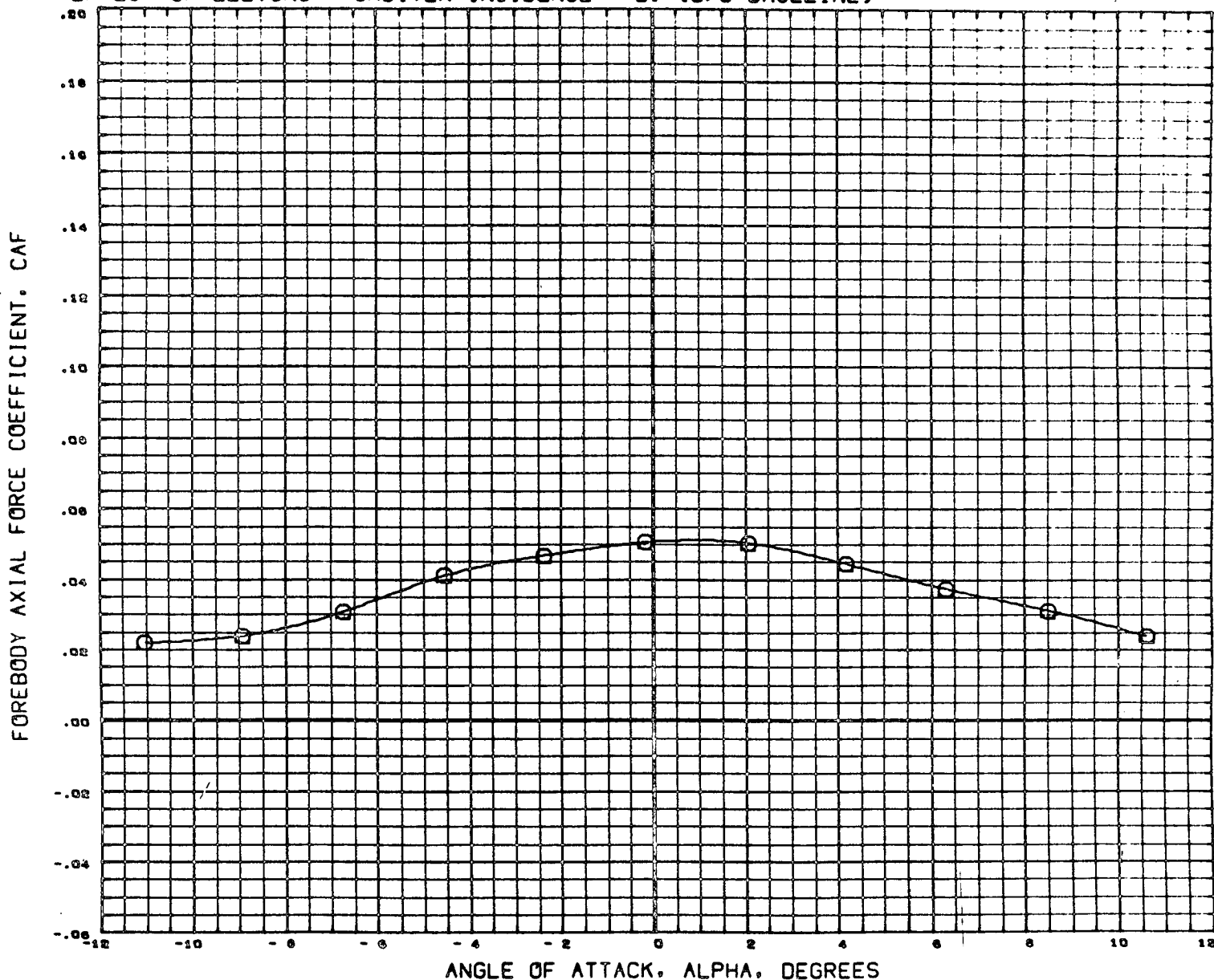
ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	10.000

REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



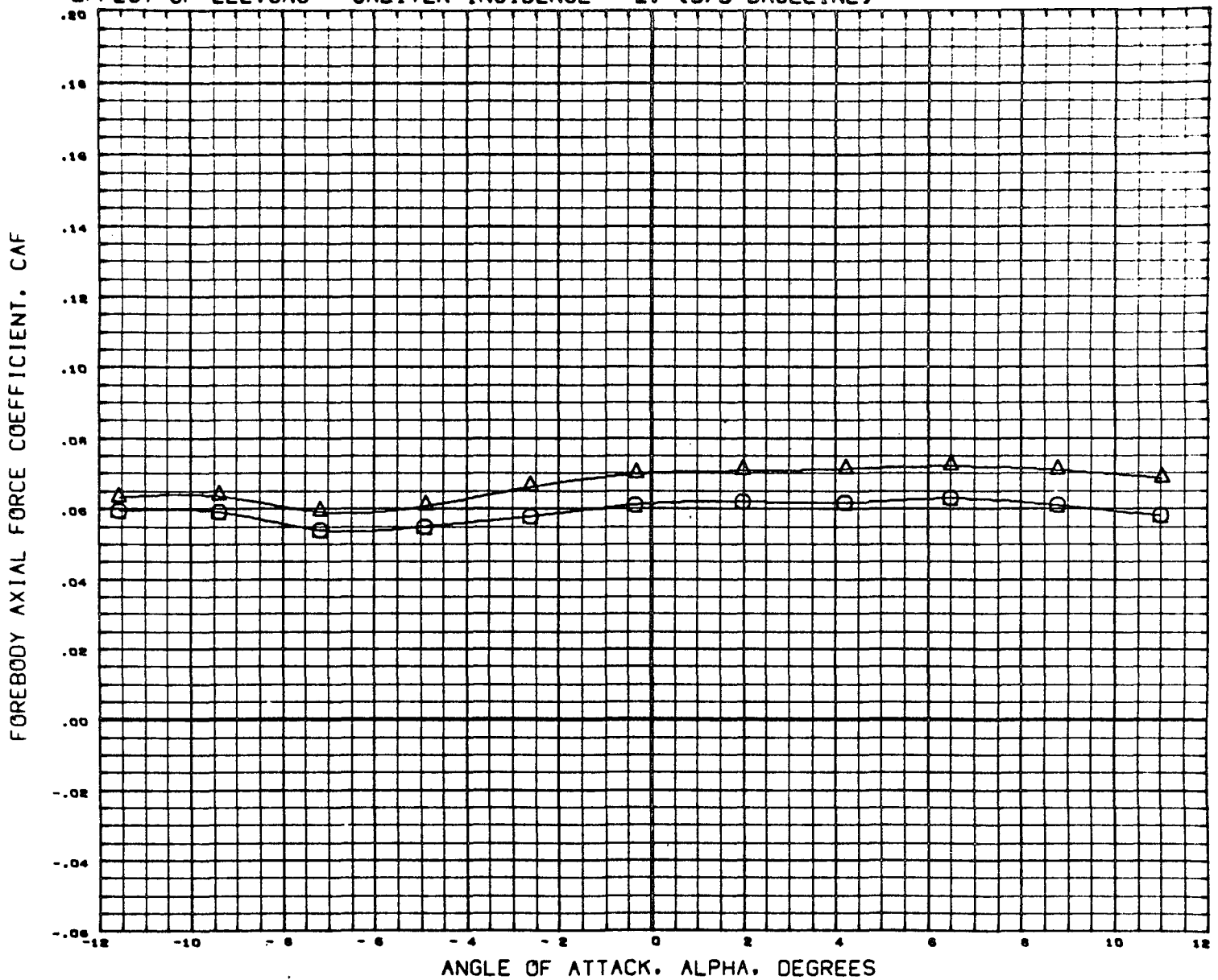
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 (H3233A)  DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
2.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	0.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0033 SCALE

MACH .60

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)

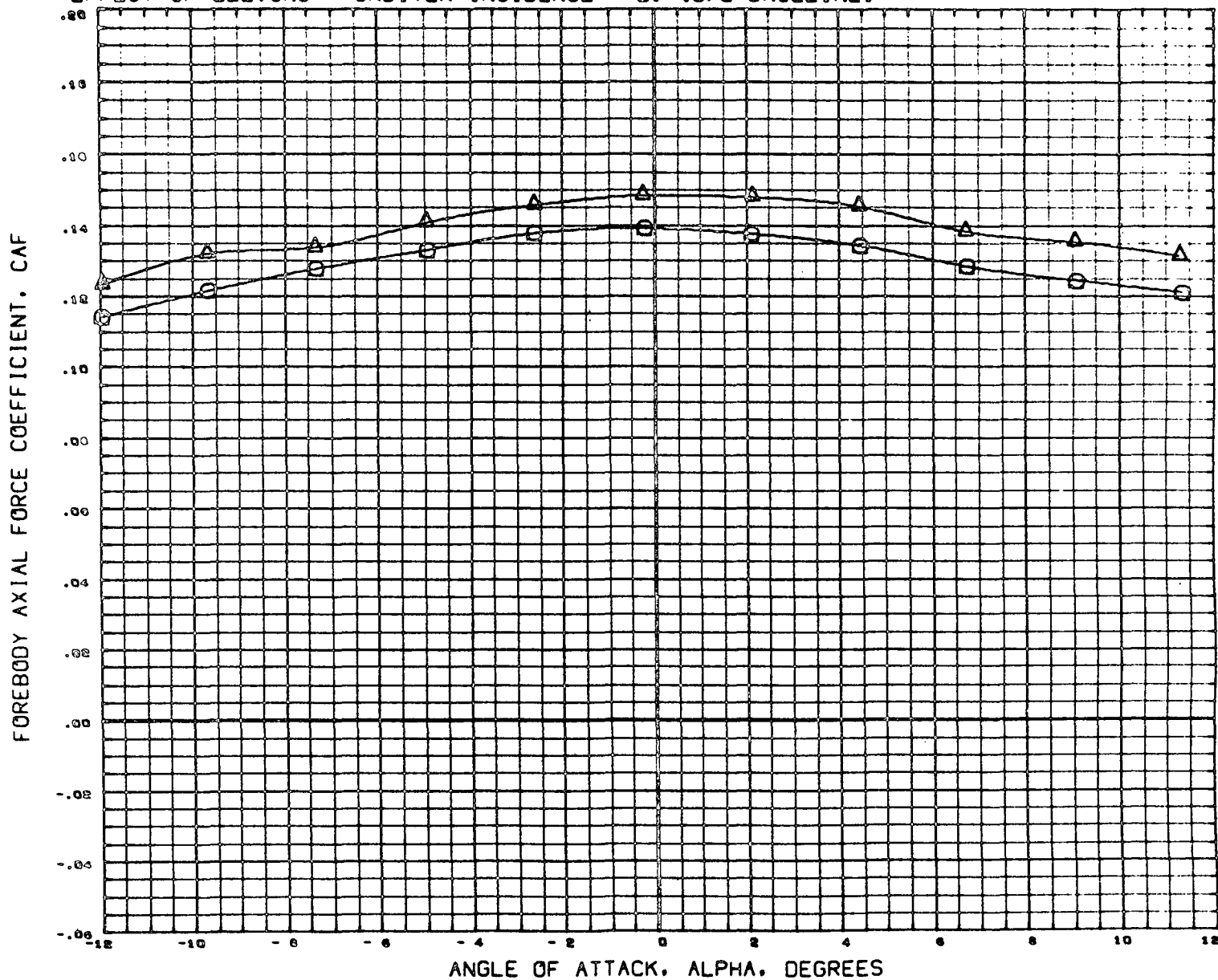


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(H3253A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17	2.000	4.000	0.000	10.000	LREF	3.0930 INCHES
						BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0033 SCALE

MACH .90

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



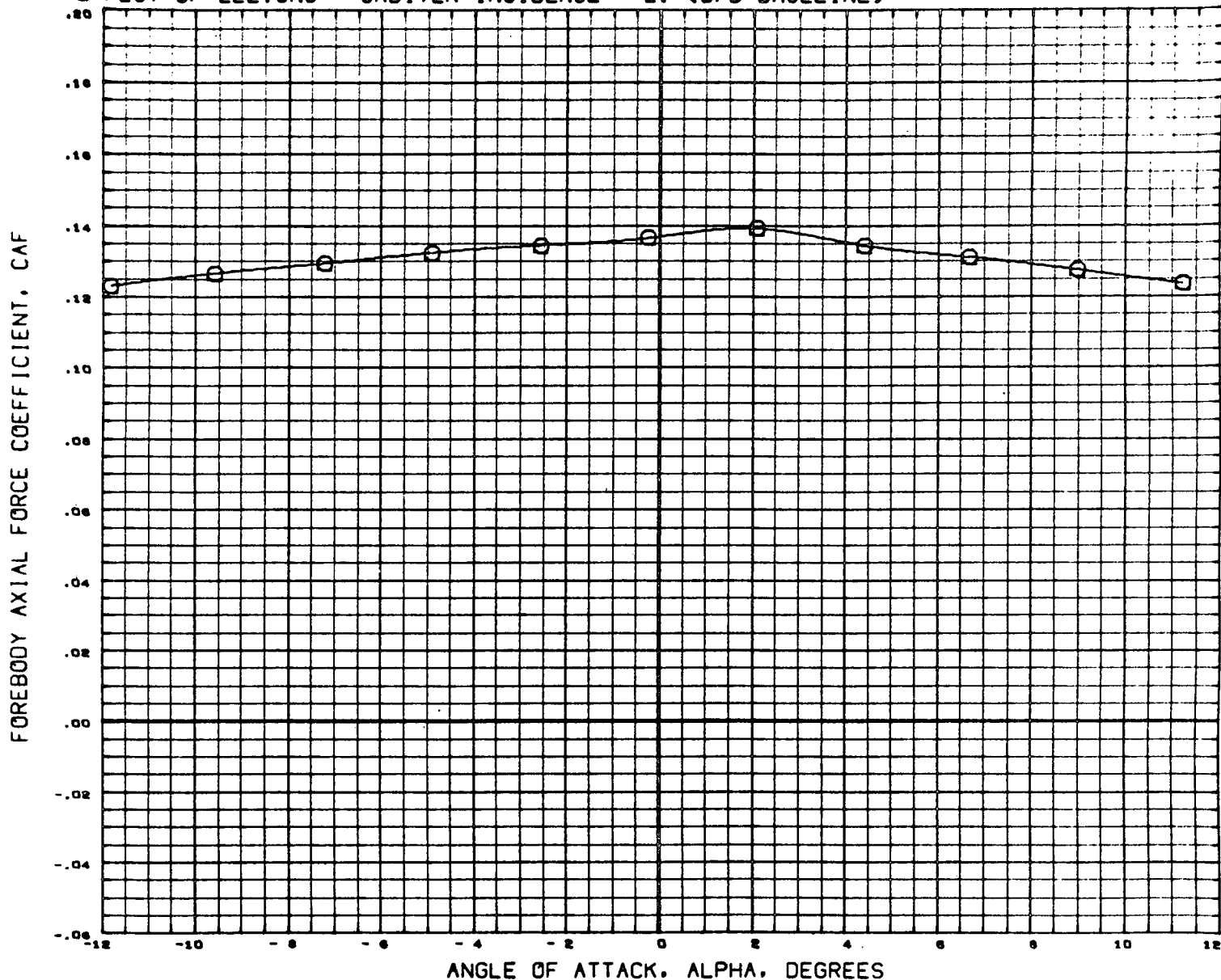
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH

1.10

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



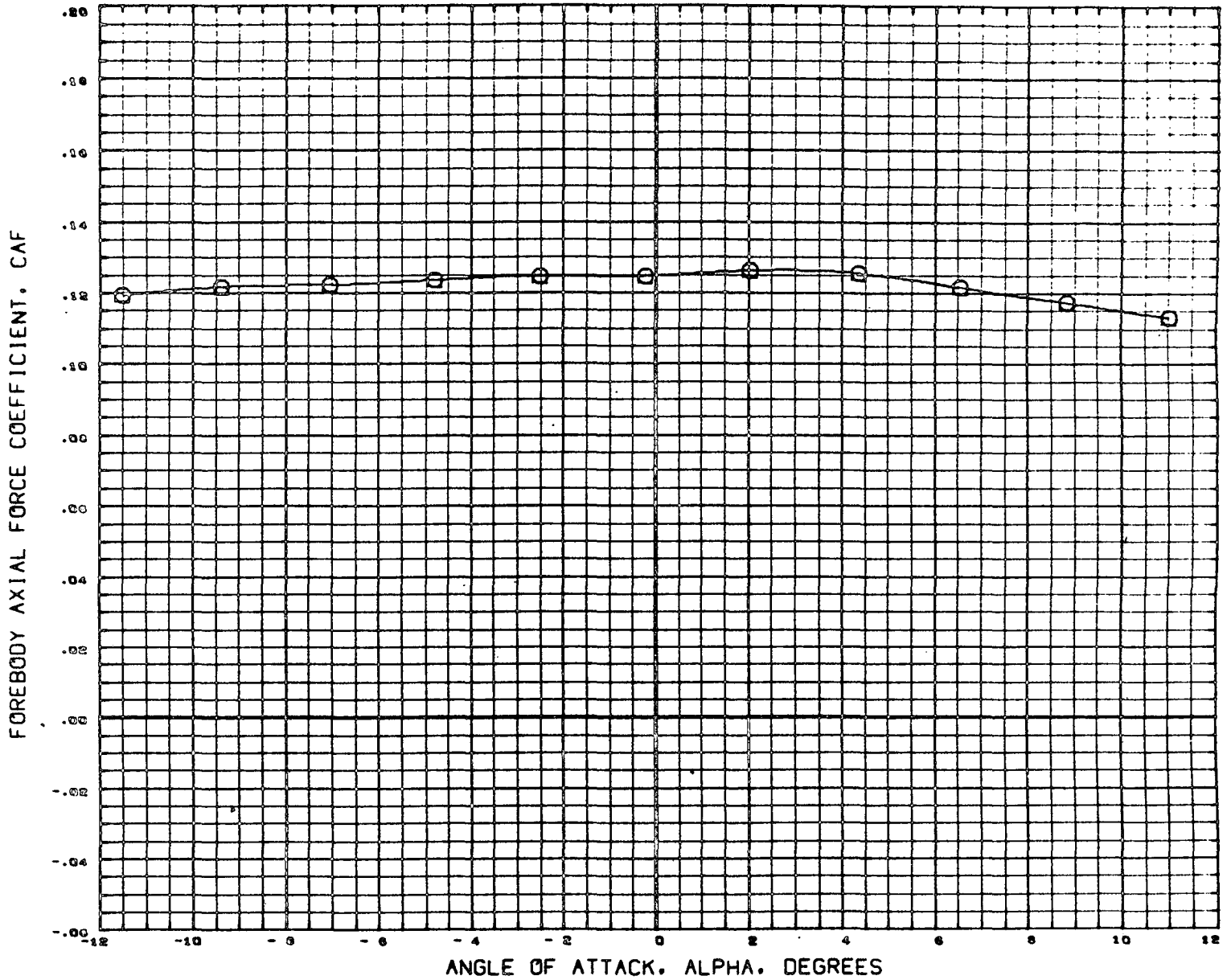
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 (H3253A) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBIT INC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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2.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.45

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



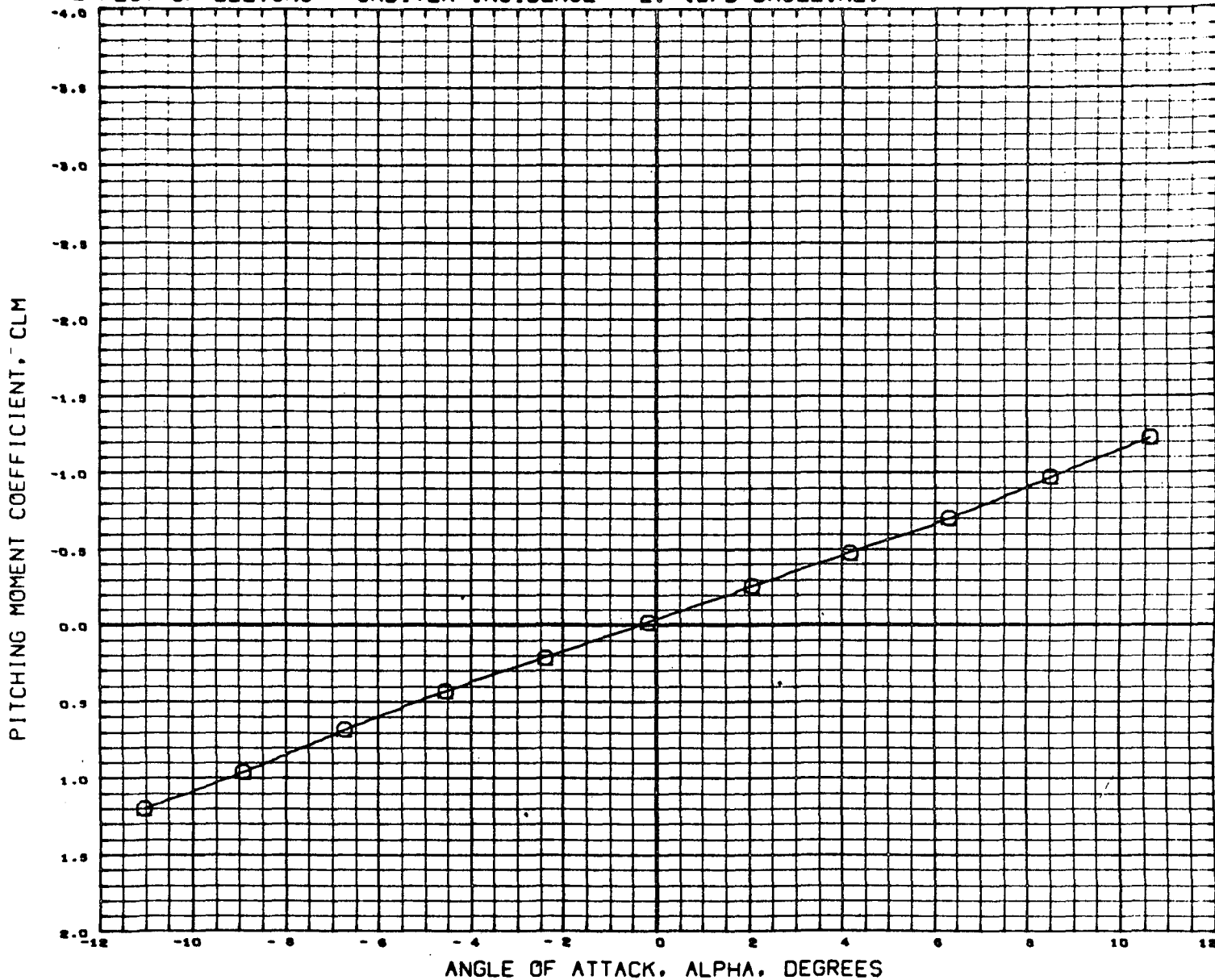
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 (H3253A) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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2.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



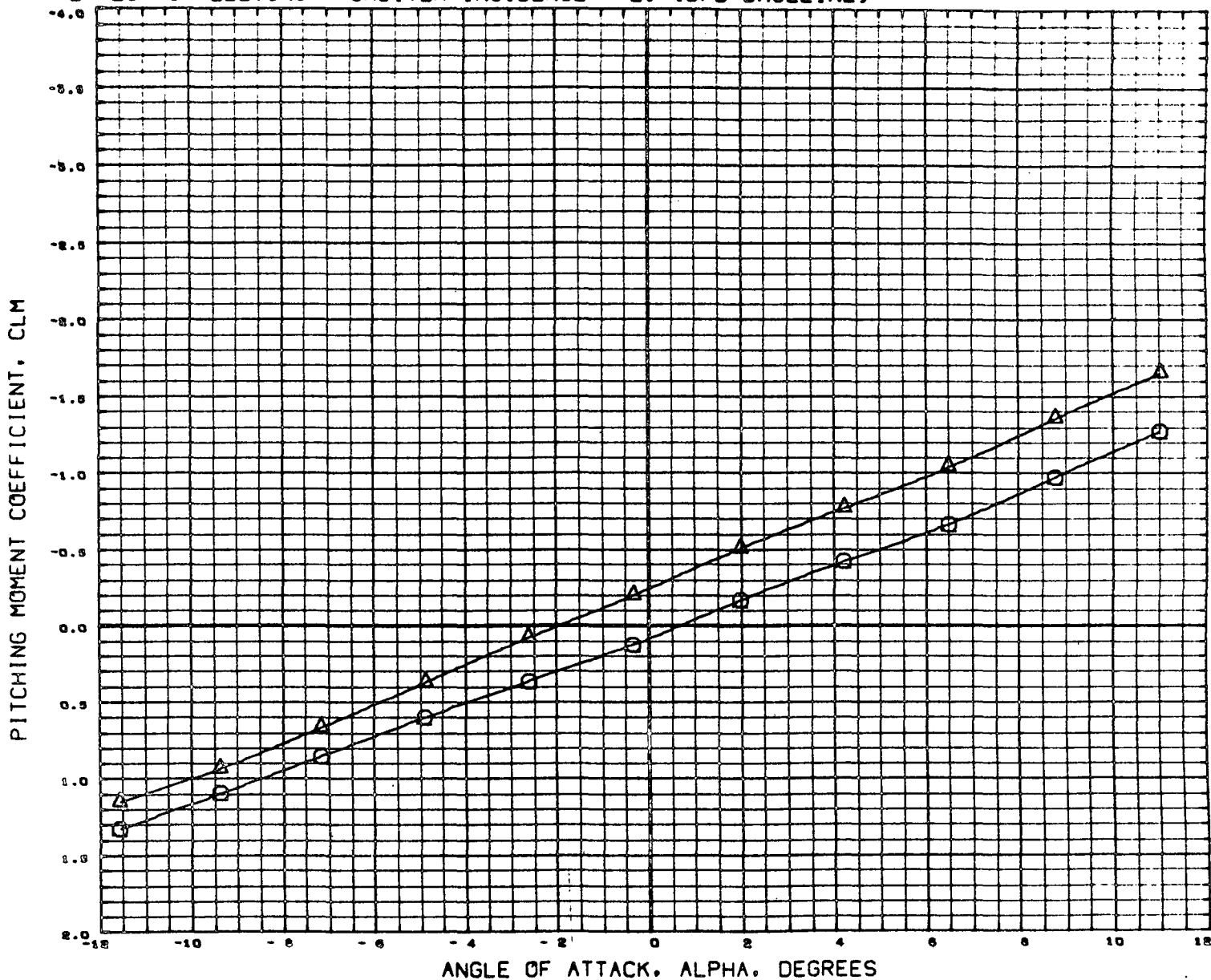
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 (H3292A) H3PC490 NR/GD LAUNCH B20C4BW14V8-B9W17V17
 (H3293A) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBITAL	POSITION	BETA	ELVATR	REFERENCE INFORMATION
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2.000	4.000	0.000	10.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
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				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .60

PAGE 419

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



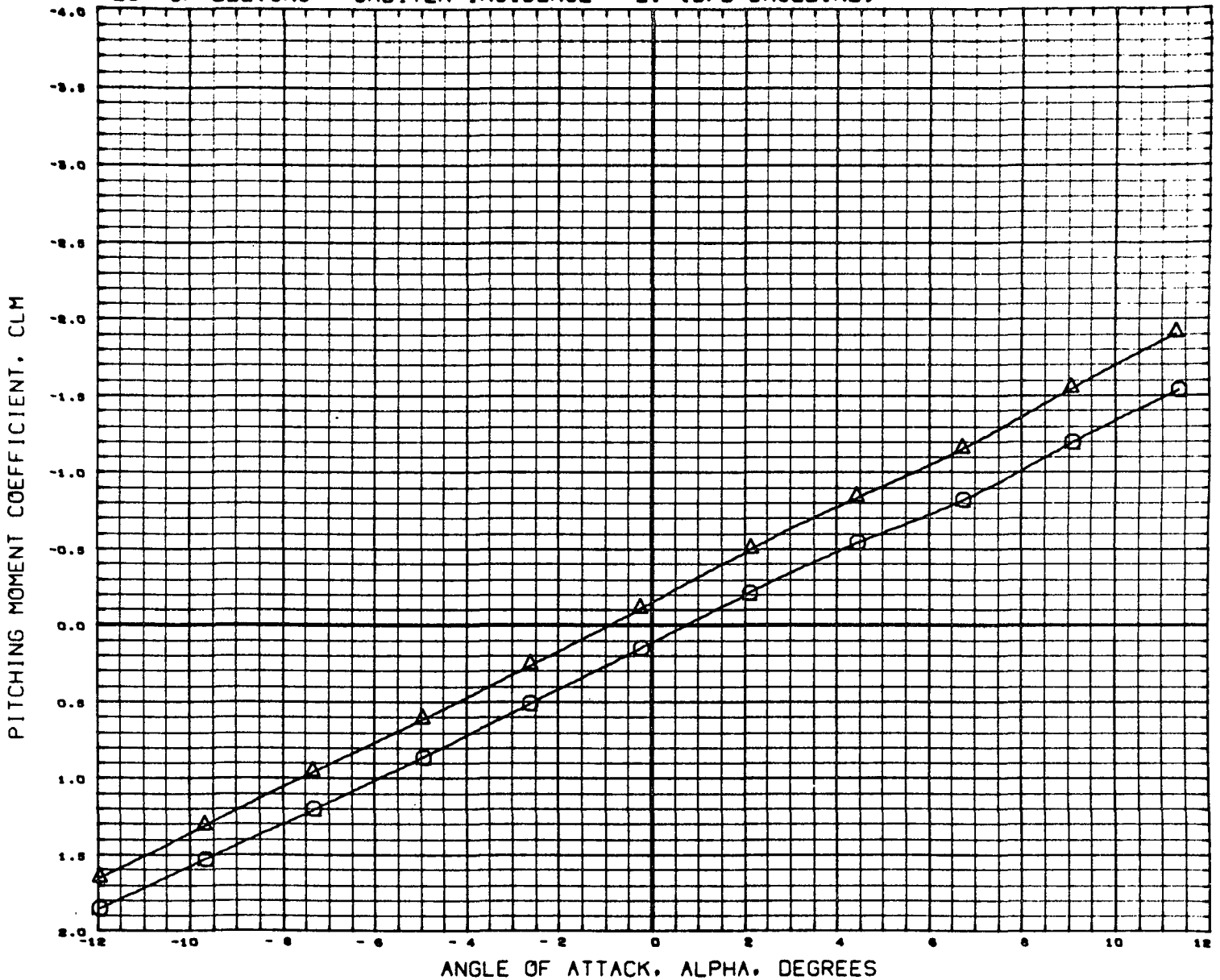
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3252A)	MSFC490 NR/GD LAUNCH 820C48W14V8+B3W17V17
(H3253A)	MSFC490 NR/GD LAUNCH 820C48W14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
2.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	4.000	0.000	10.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH .90

PAGE 420

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



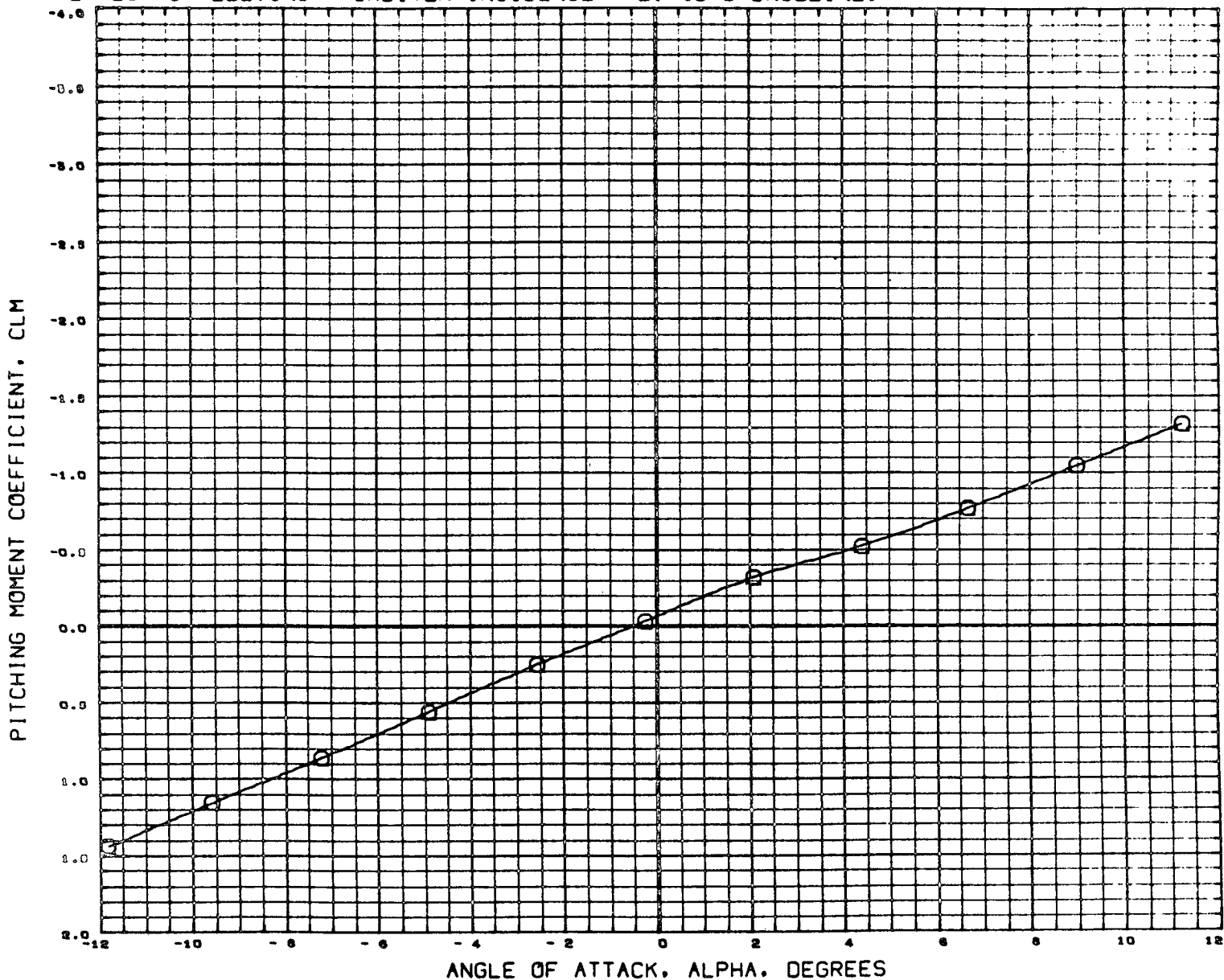
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(H3292A) ○	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(H3293A) △	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
2.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	4.000	0.000	10.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRF 0.0000
				YMRF 0.0000
				ZMRF 0.0000
				SCALE 0.0035 SCALE

MACH 1.10

PAGE 421

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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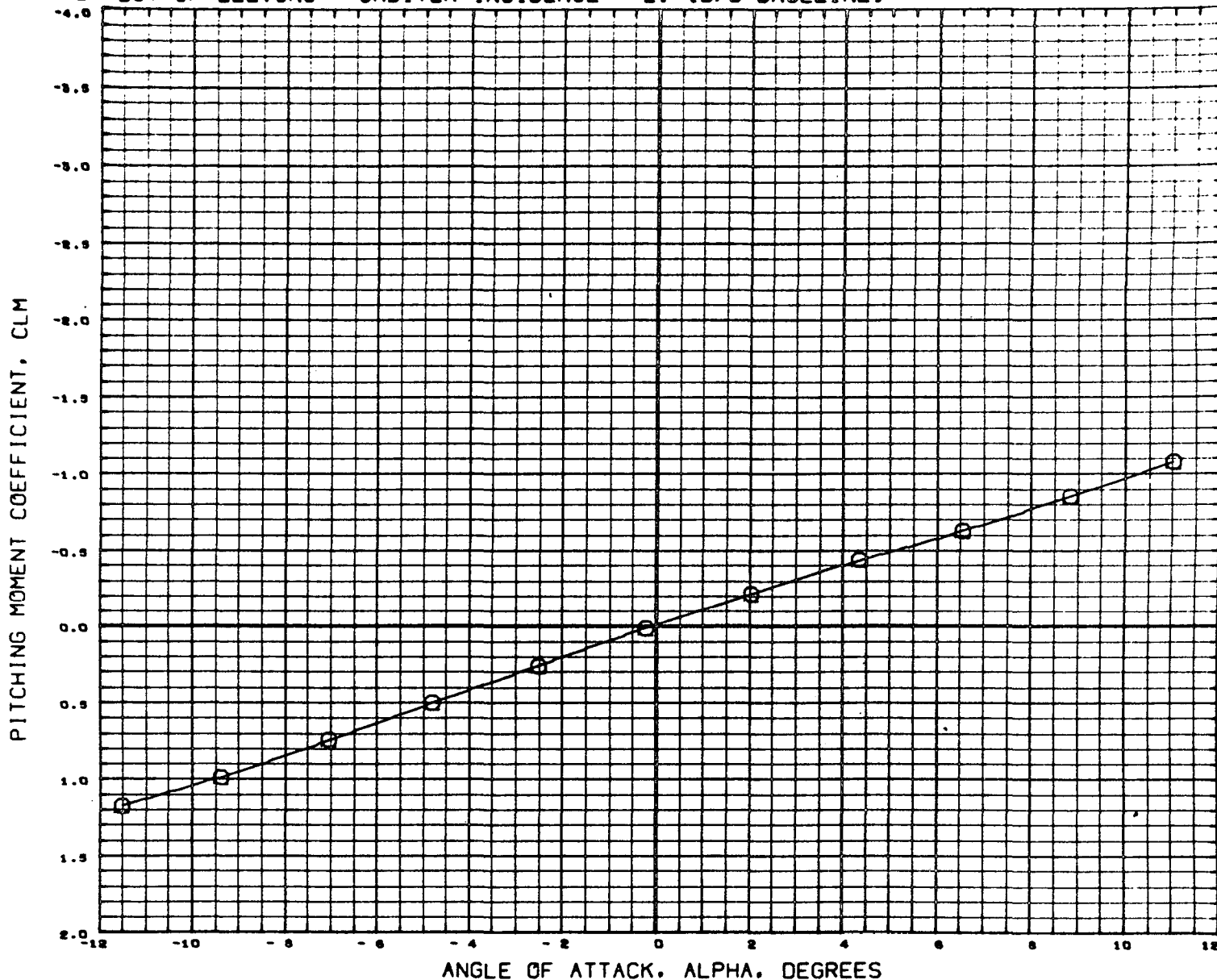
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 2.000 4.000 0.000 10.000

REFERENCE INFORMATION
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 LREF 3.0990 INCHES
 BREF 8.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.45

PAGE 422

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



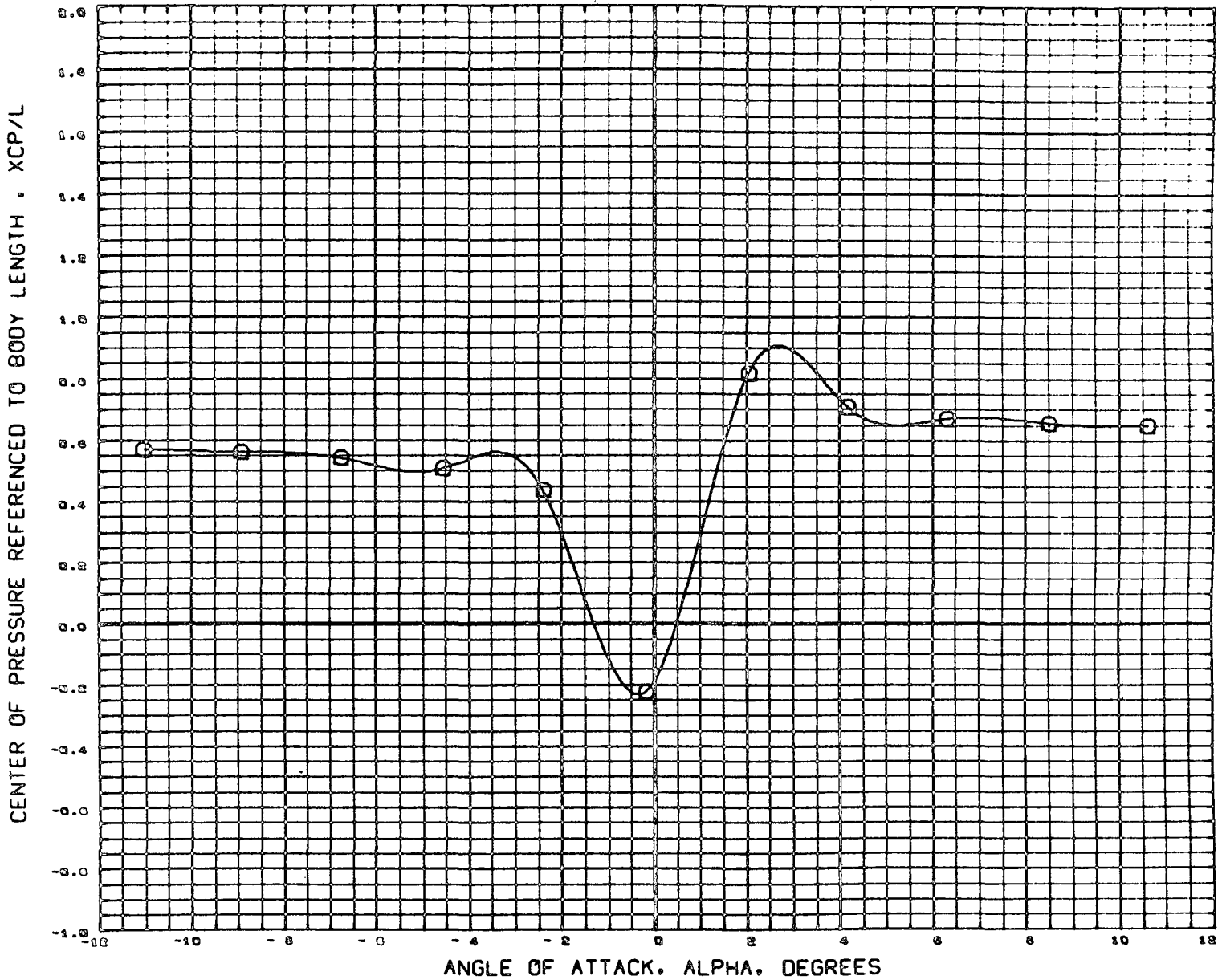
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				XMRF	0.0000
				YMRF	0.0000
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MACH 1.96

PAGE 423

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



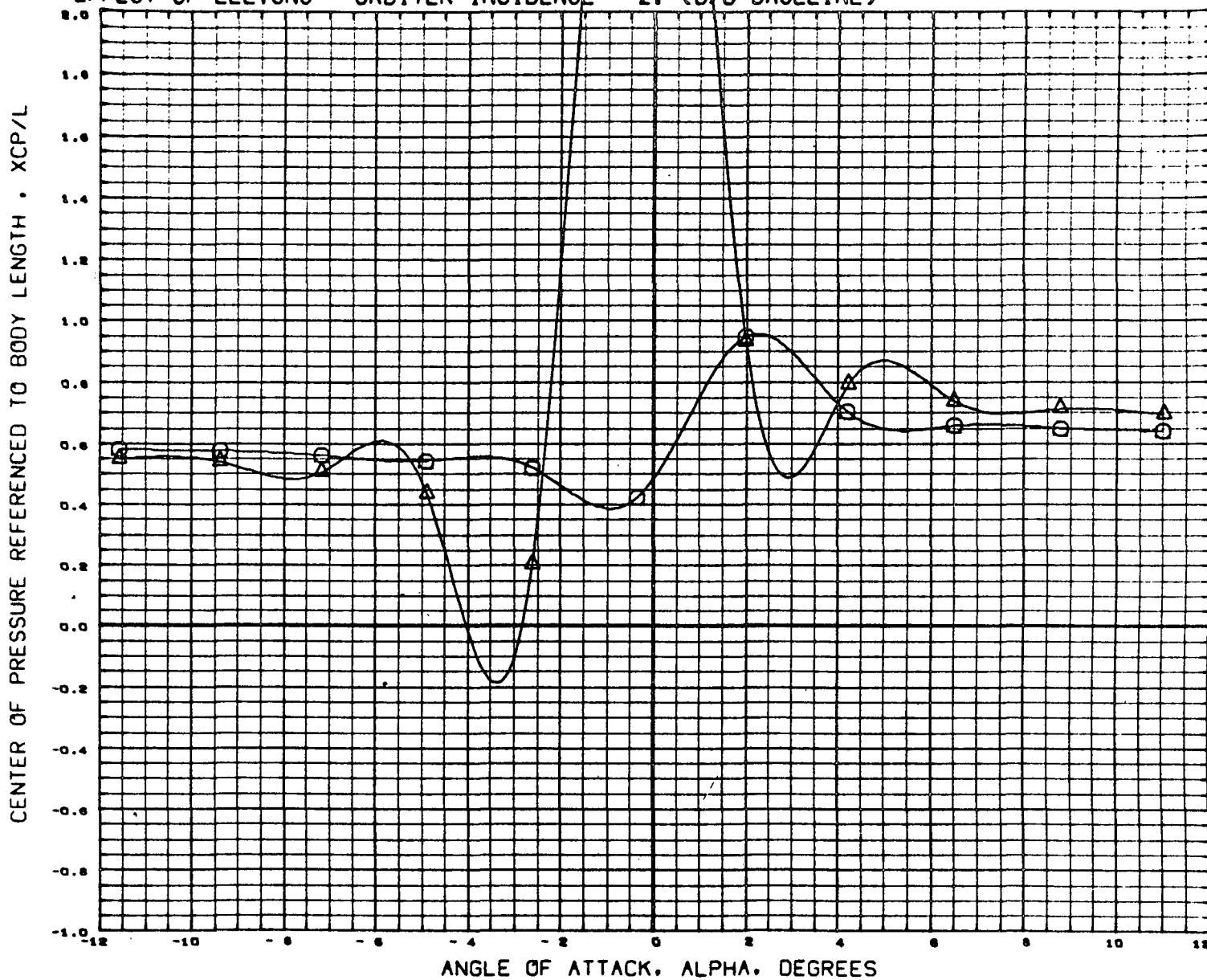
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				YMRR	0.0000
				ZMRR	0.0000
				SCALE	0.0035 SCALE

MACH .60

PAGE 424

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (H3252A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (H3253A) MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

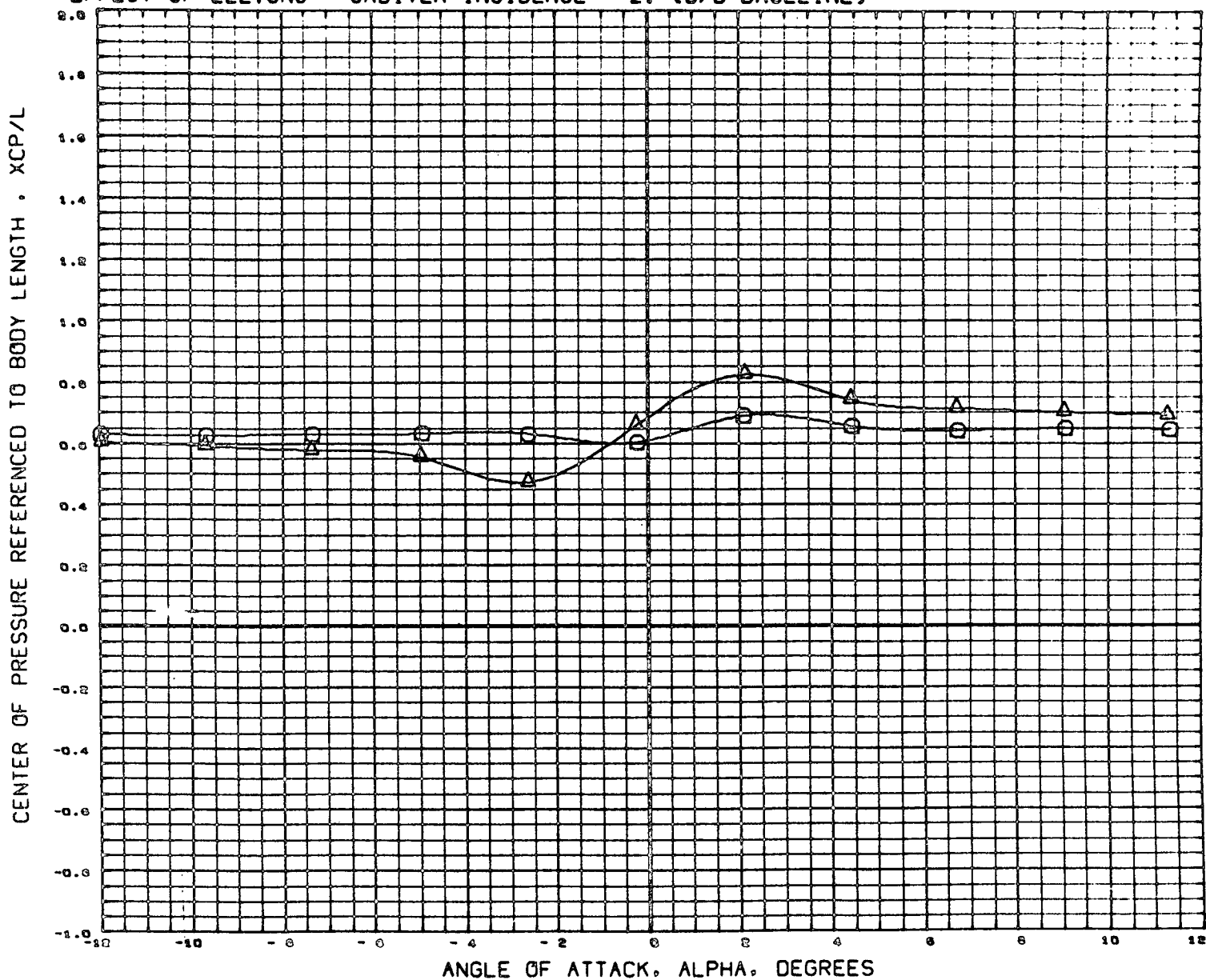
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 2.000 4.000 0.000 10.000

REFERENCE INFORMATION
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 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH .90

PAGE 425

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (8/B BASELINE)



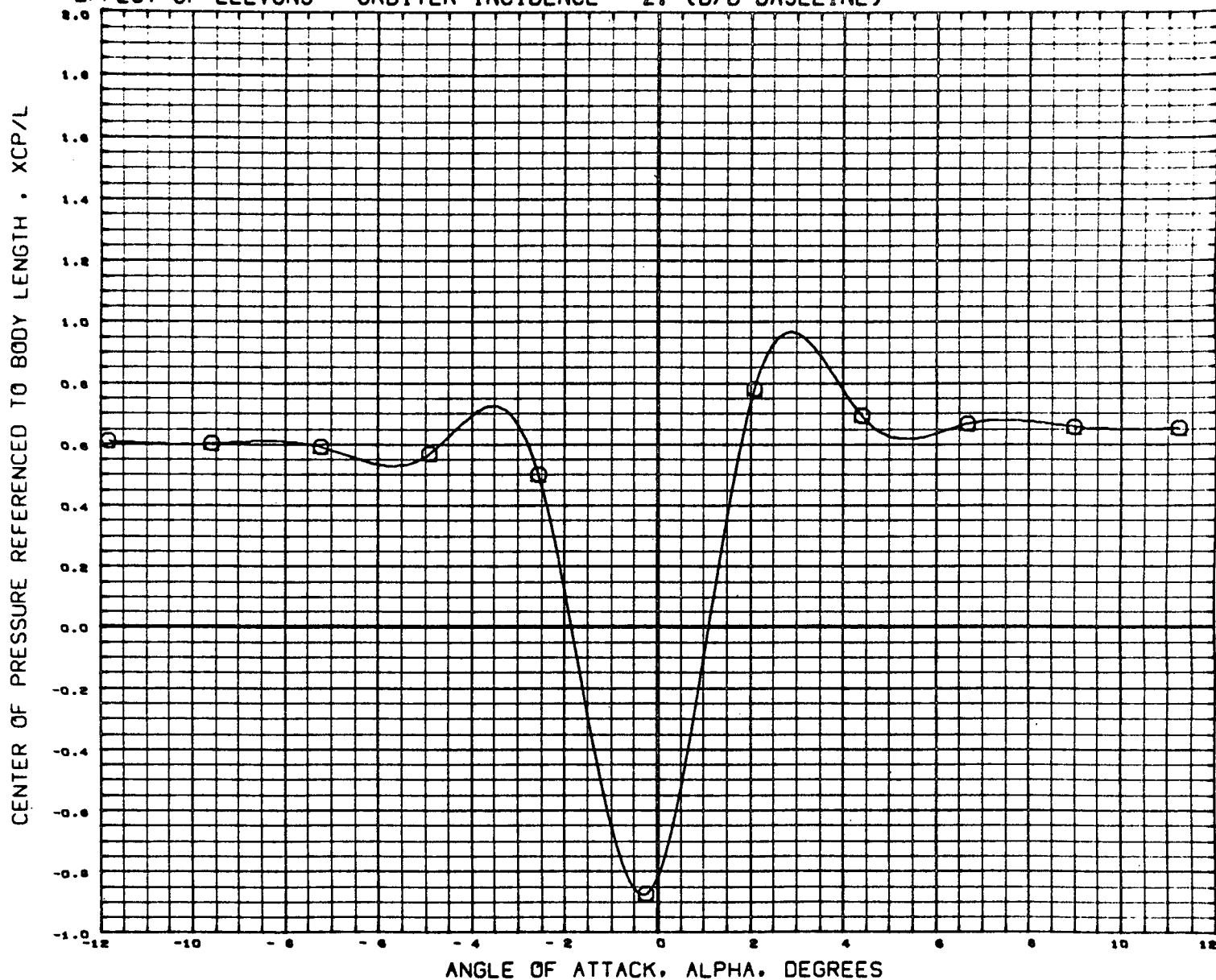
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ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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2.000	4.000	0.000	10.000	LREP 3.0950 INCHES
				BREP 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.10

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3253A) DATA NOT AVAILABLE FOR ALL CONDITIONS

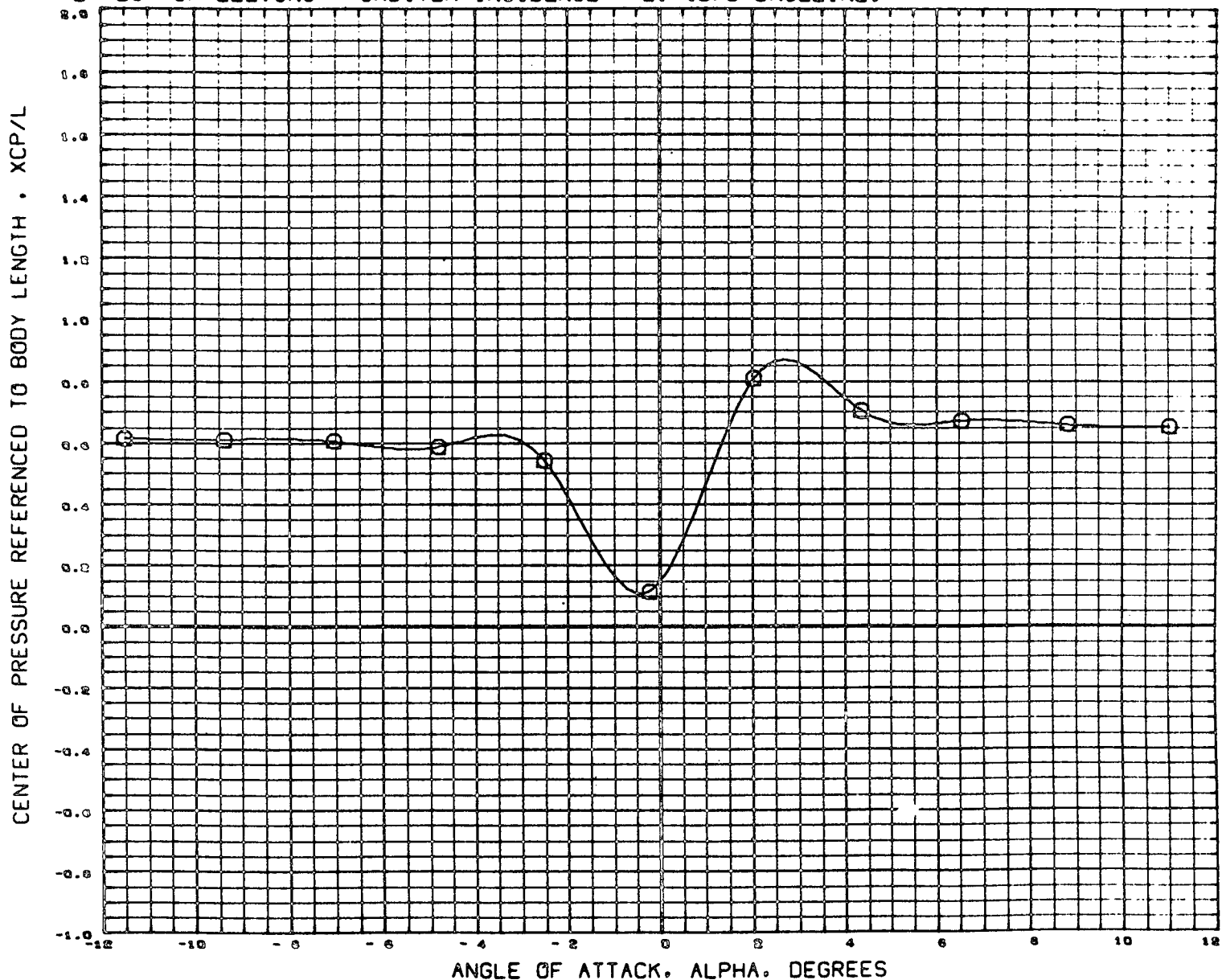
ORBINC POSITN BETA ELVATR
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 2.000 4.000 0.000 10.000

REFERENCE INFORMATION
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 LREF 3.0950 INCHES
 BREF 6.0950 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.45

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (H3293A) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	10.000

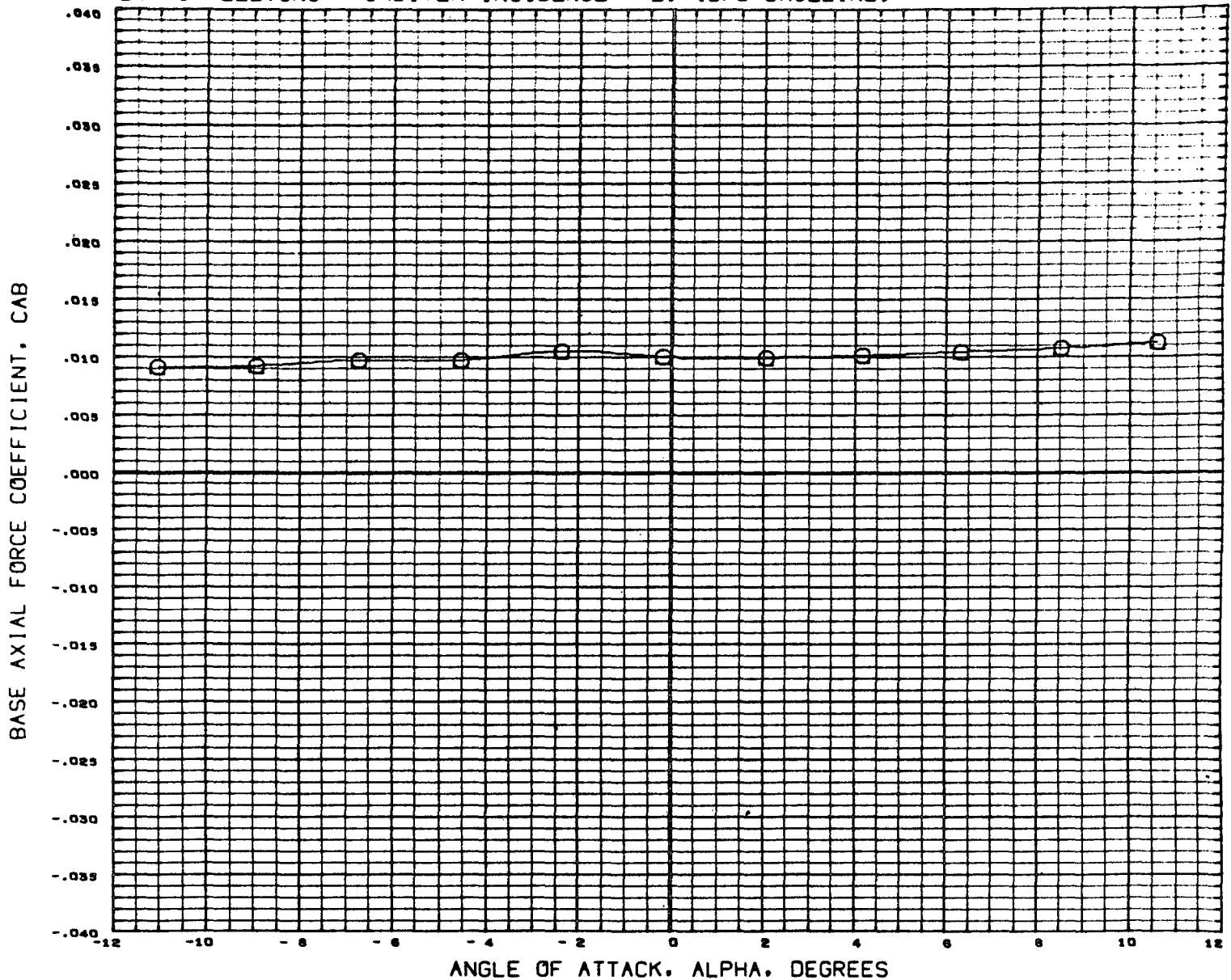
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YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH

1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



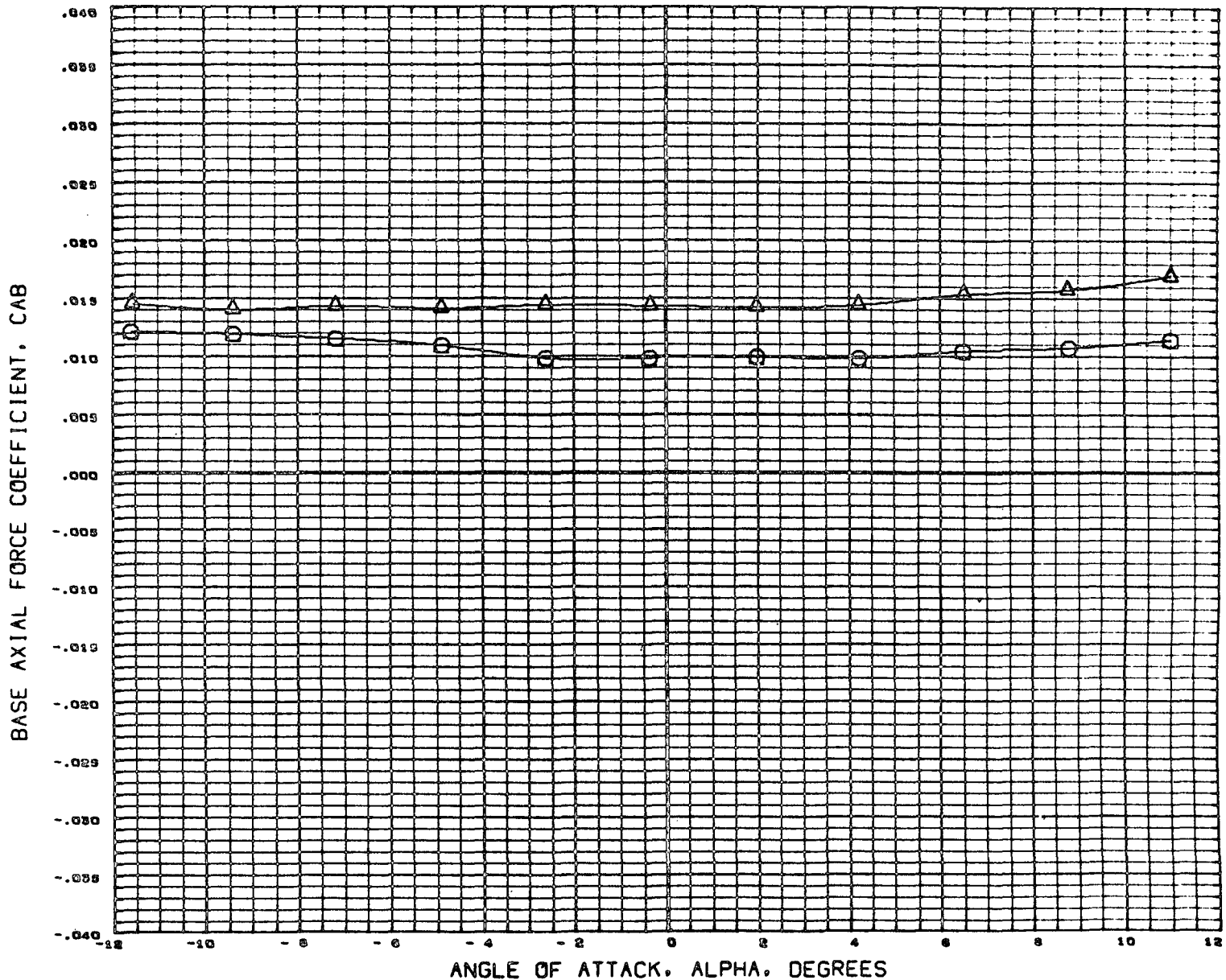
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 (H3253A) DATA NOT AVAILABLE FOR ALL CONDITIONS

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2.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH .60

PAGE 429

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)

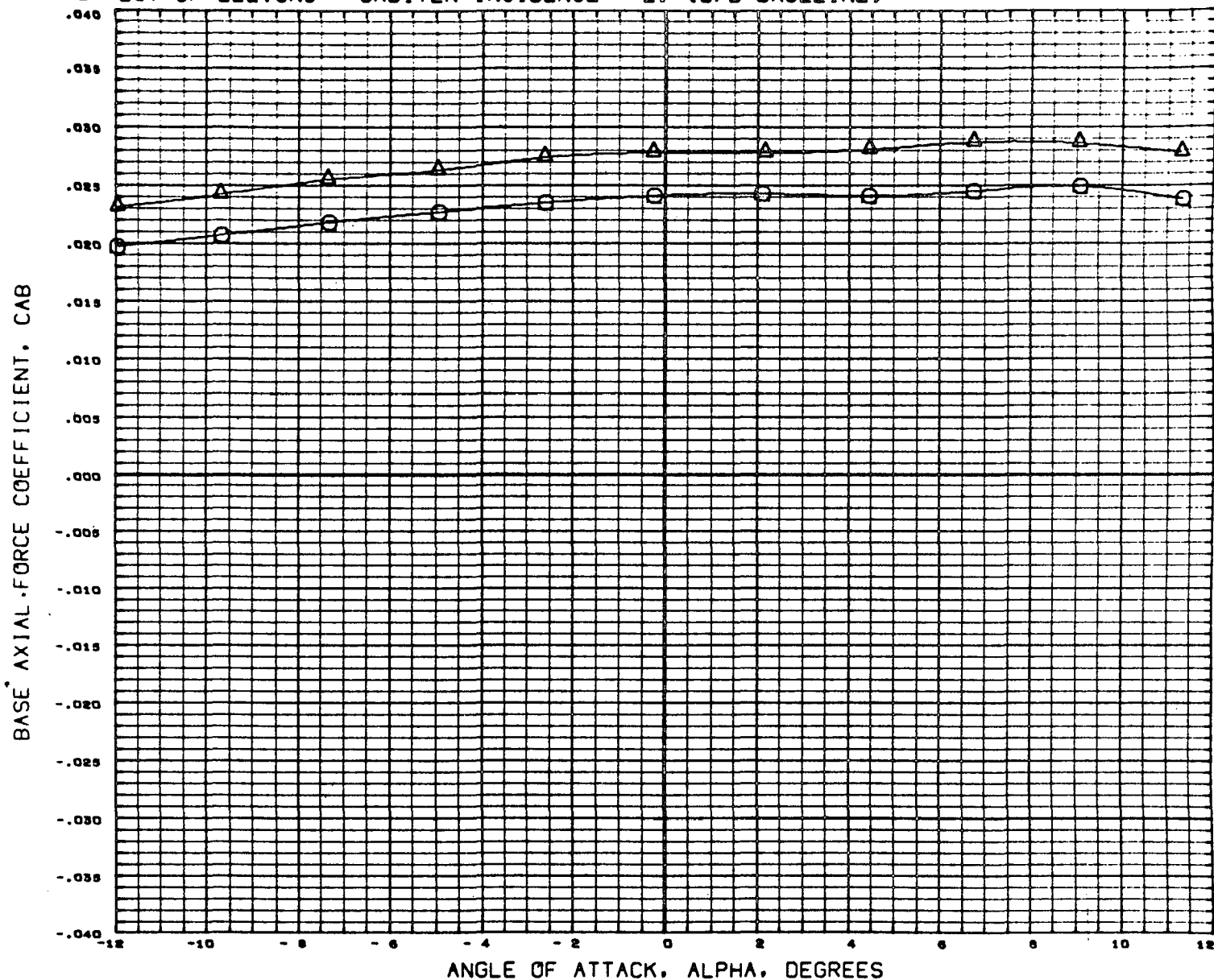


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(H3293A)	MSPC490 NR/GD LAUNCH 820C4BW14V8+85W17V17	2.000	4.000	0.000	10.000	LREF	3.0990 INCHES
						SREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .90

PAGE 430

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



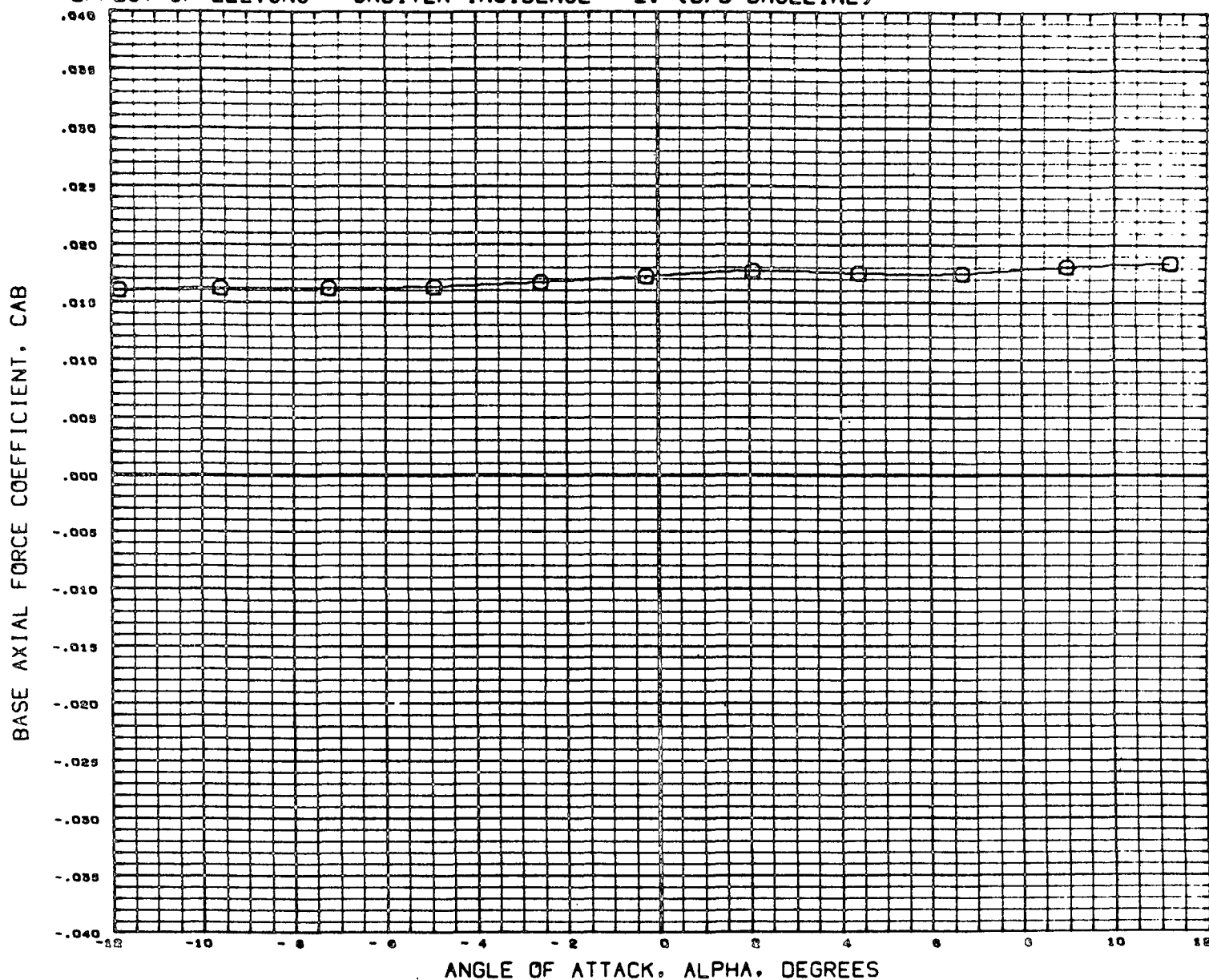
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(H3253A)	MSFC490 NR/GD LAUNCH 820C4BW14V8+85W17V17


ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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2.000	4.000	0.000	10.000	LREF 3.0990 INCHES
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				YMRP 0.0000
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MACH 1.10

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



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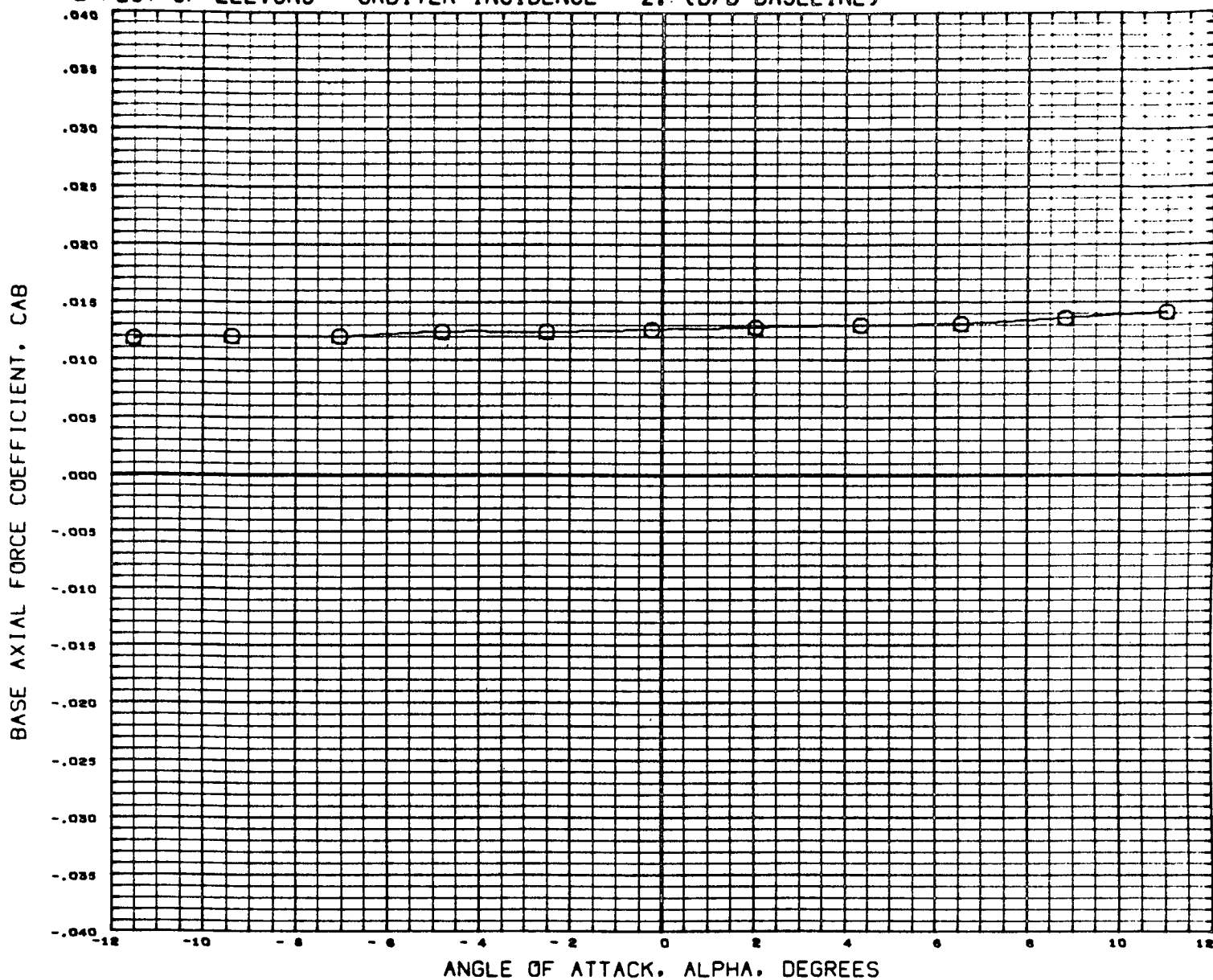
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2.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0950	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.45

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



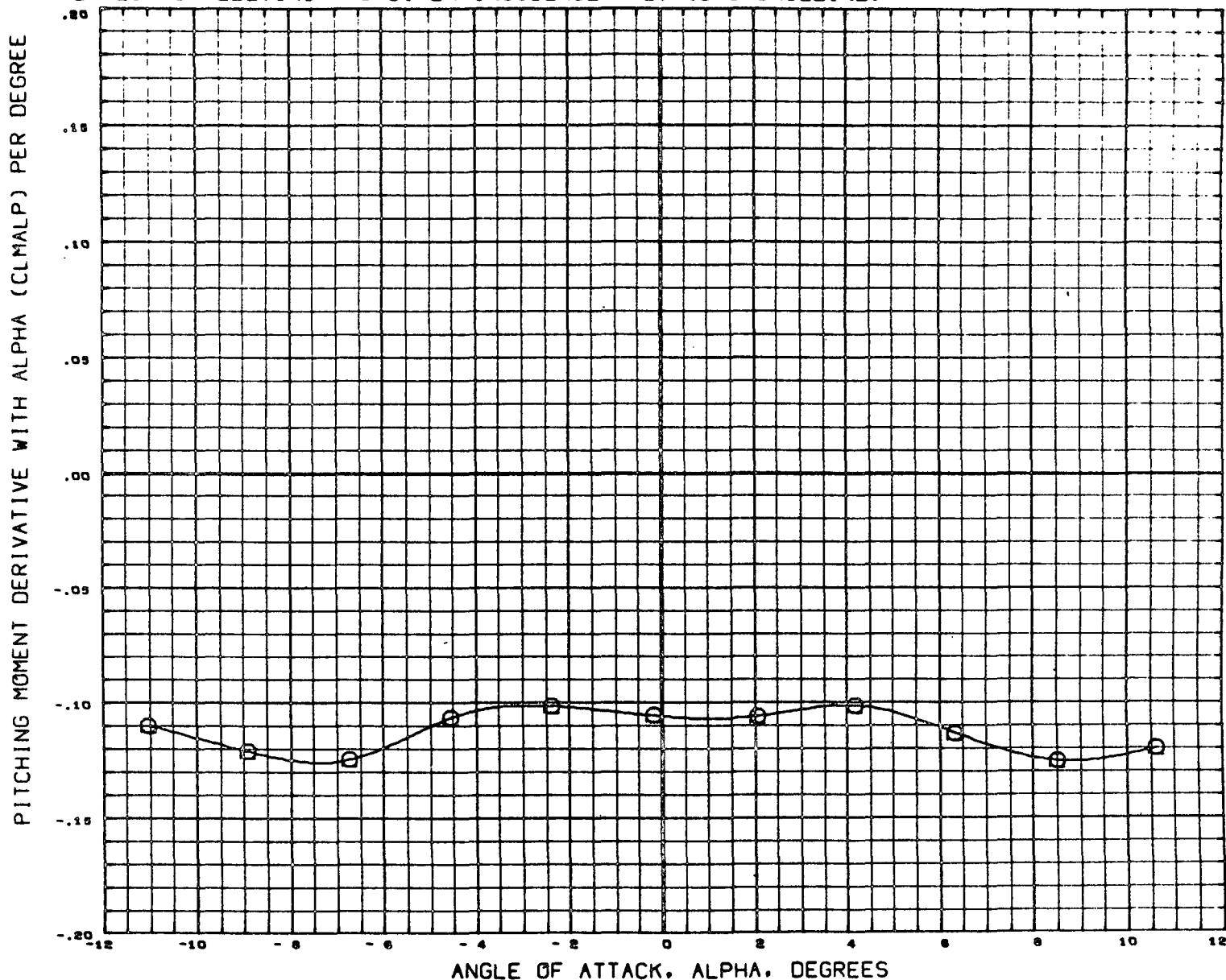
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2.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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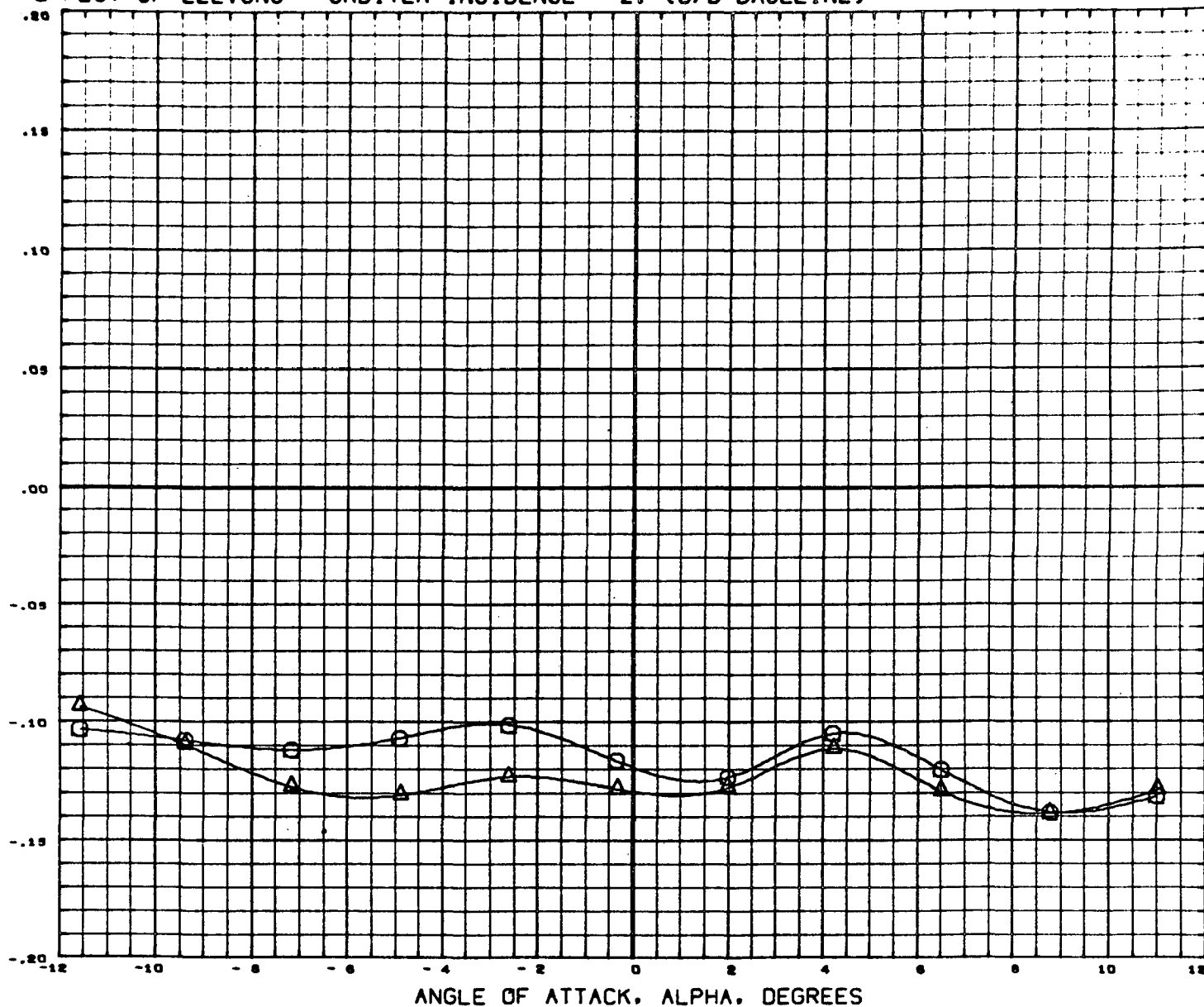
ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	10.000

REFERENCE INFORMATION	
SREF	15.6560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0033 SCALE

MACH .60

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



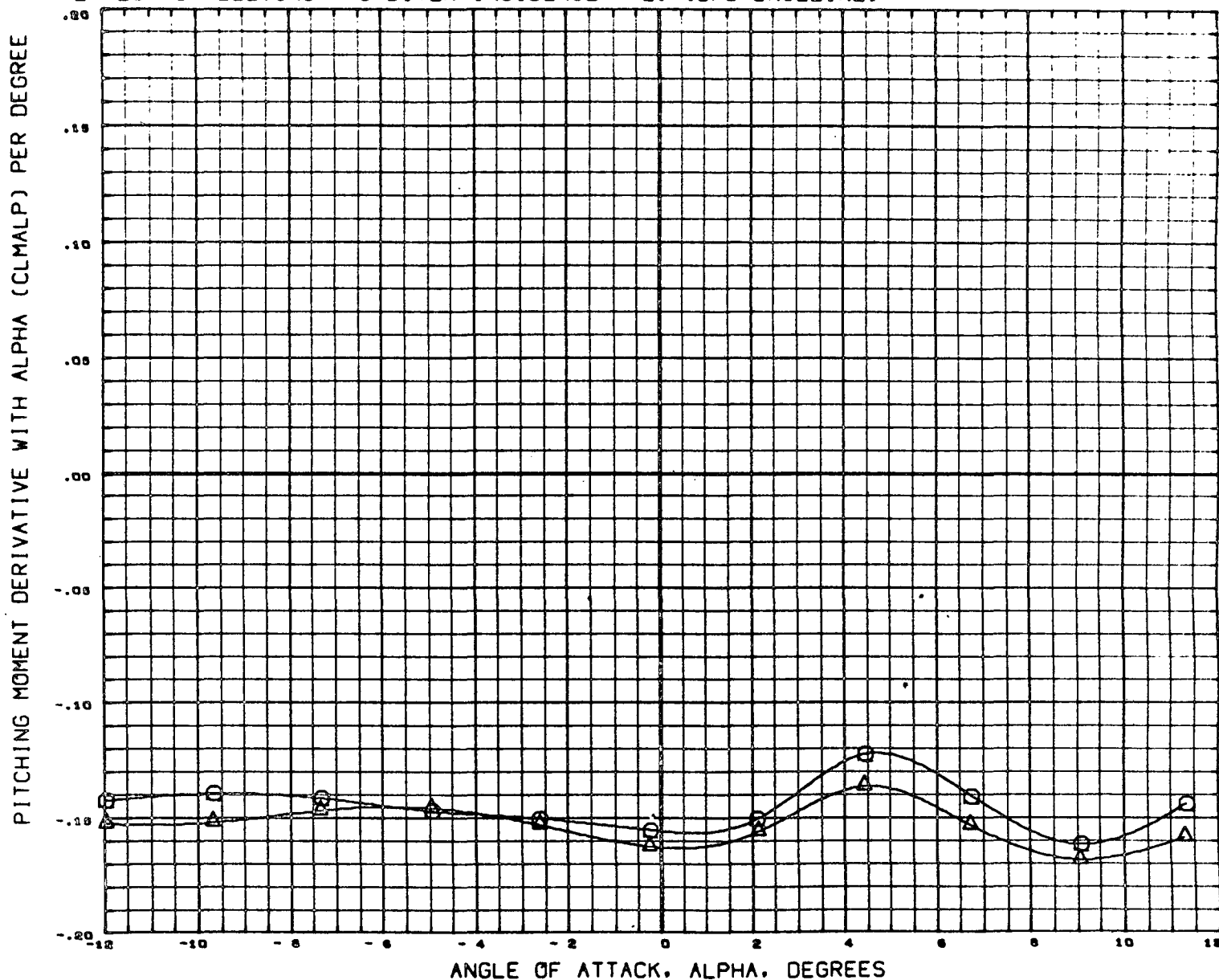
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(13293A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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2.000	4.000	0.000	10.000	LREF 3.0930 INCHES
				BREF 0.0990 INCHES
				XMRF 0.0000
				YMRF 0.0000
				ZMRF 0.0000
				SCALE 0.0035 SCALE

MACH .90

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13252A) M3FC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (13253A) M3FC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC POSITN BETA ELVATR
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 2.000 4.000 0.000 10.000

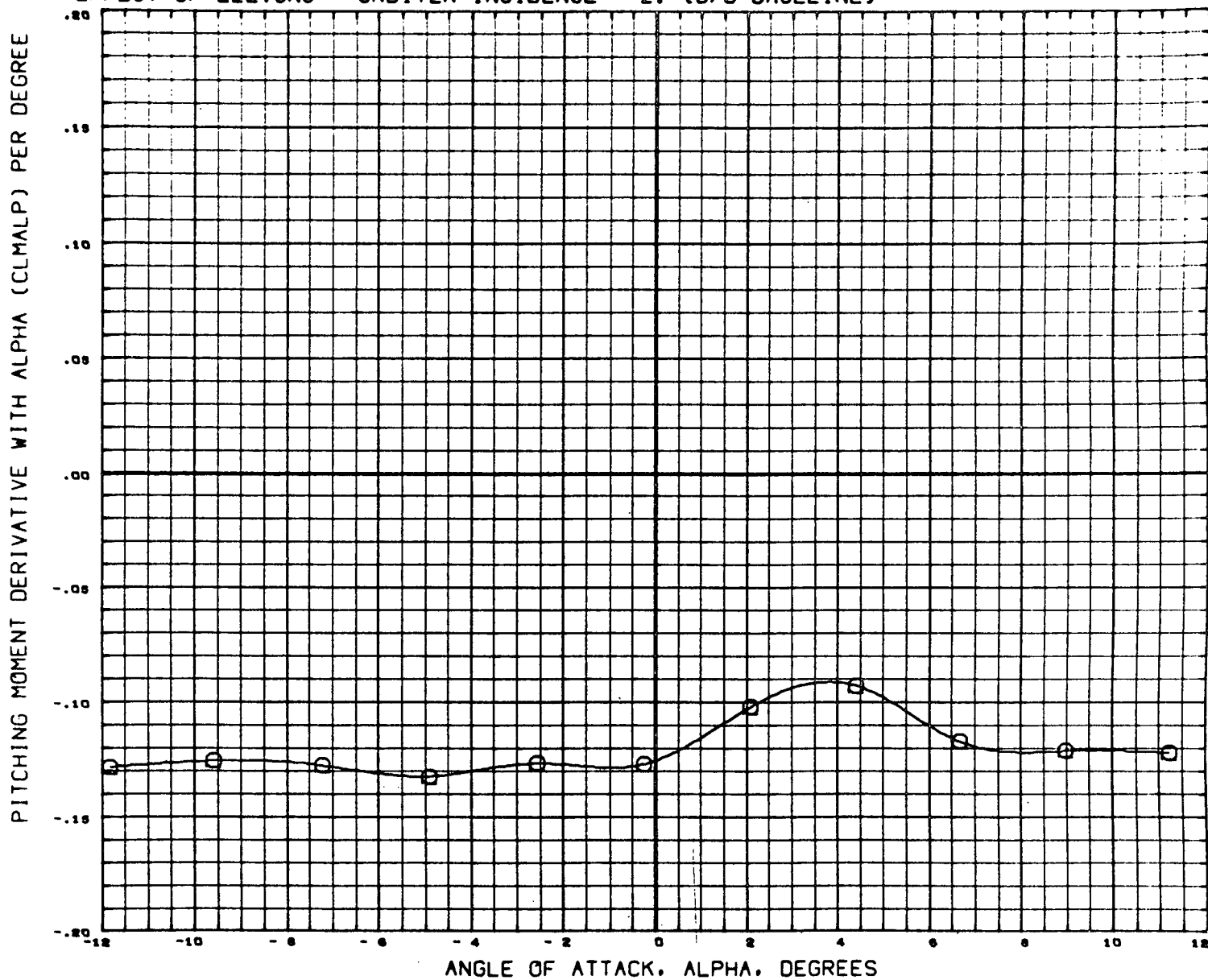
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 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH 1.10

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{C.6.

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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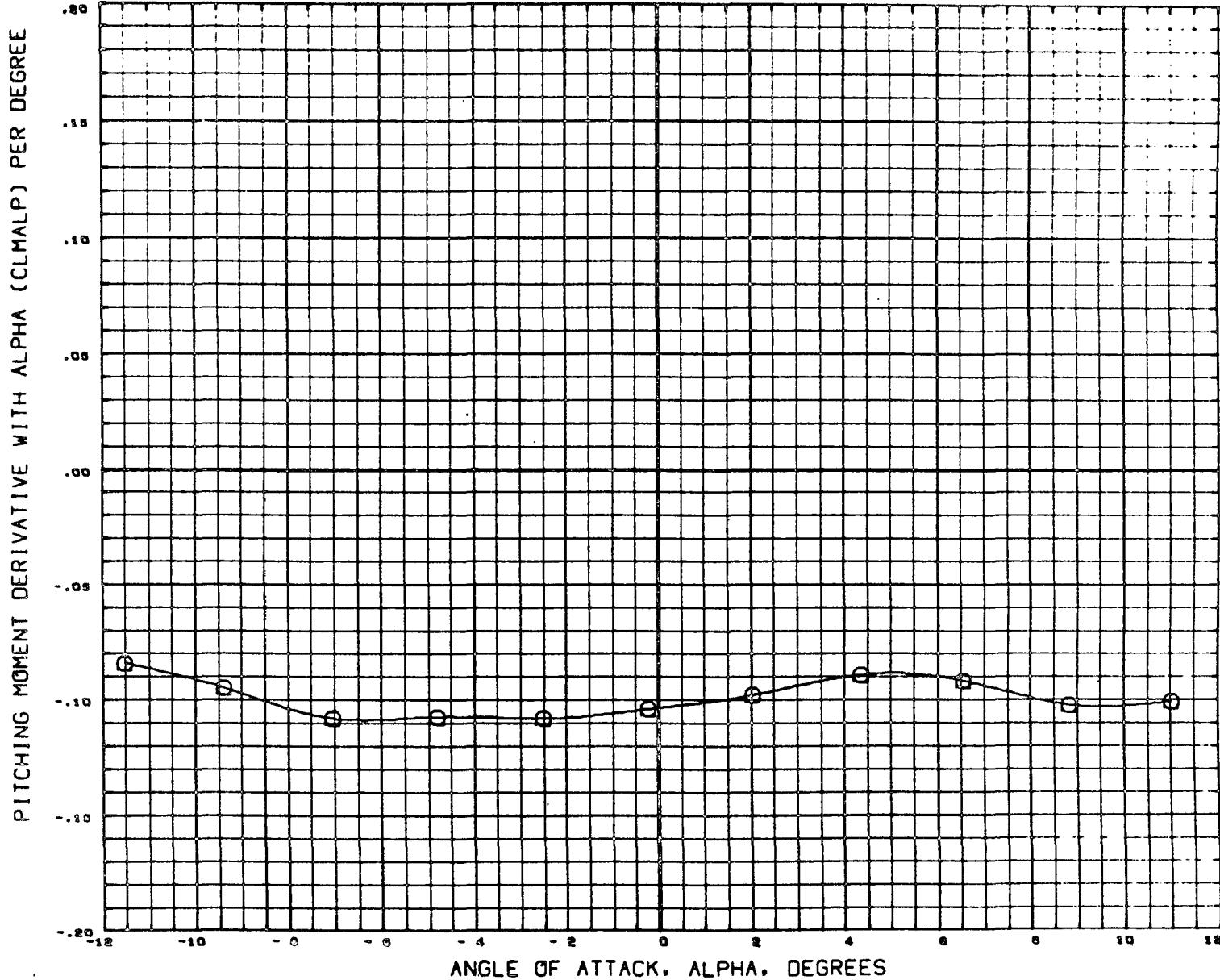
ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	10.000

REFERENCE INFORMATION	
SREF	13.6560 SQ IN
LREF	3.0950 INCHES
BREF	6.0990 INCHES
XMRP	0.0000
YMRP	0.0000
ZMRP	0.0000
SCALE	0.0035 SCALE

MACH 1.45

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



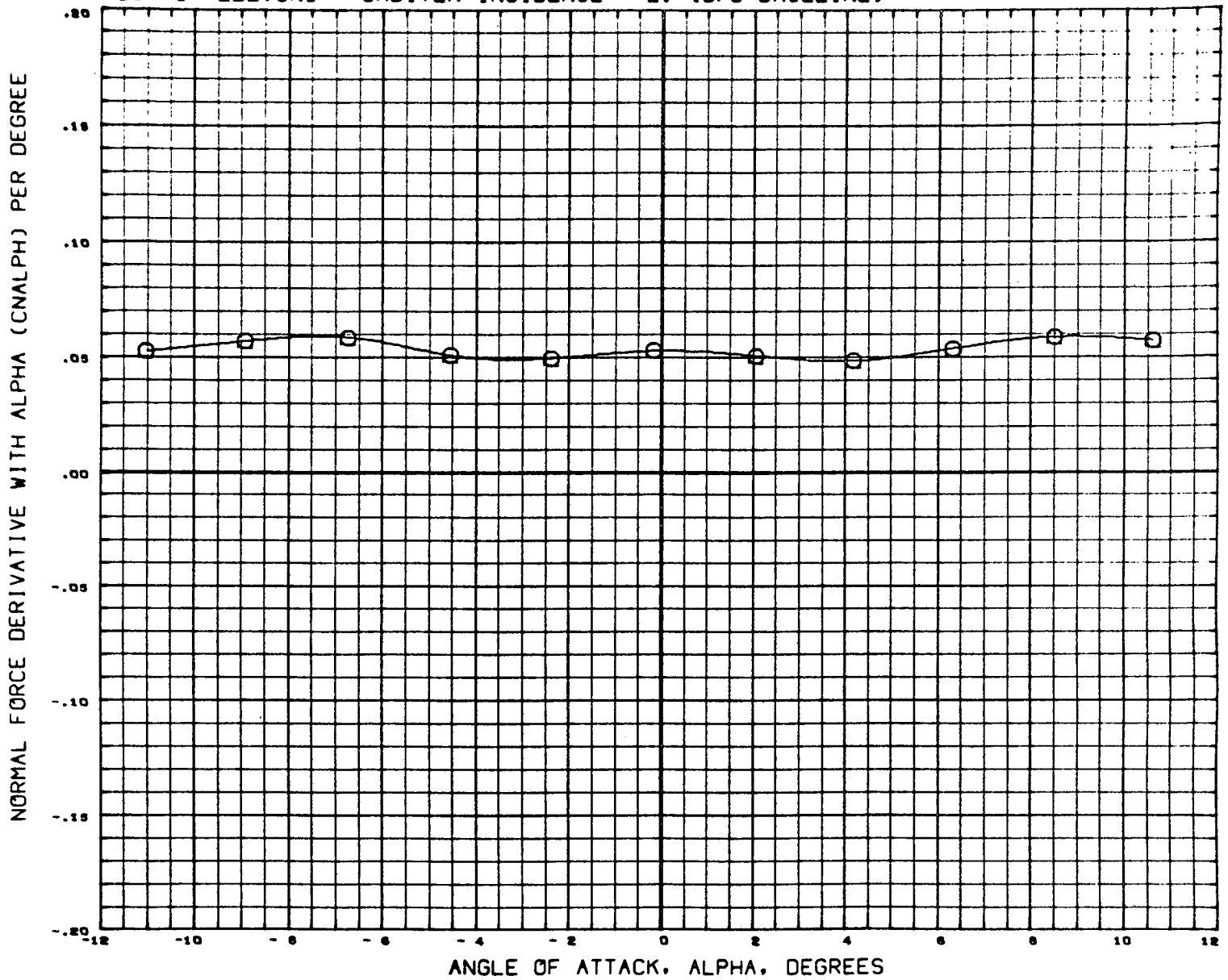
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 (13253A) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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2.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRF	0.0000
				YMRF	0.0000
				ZMRF	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (13233A) DATA NOT AVAILABLE FOR ALL CONDITIONS

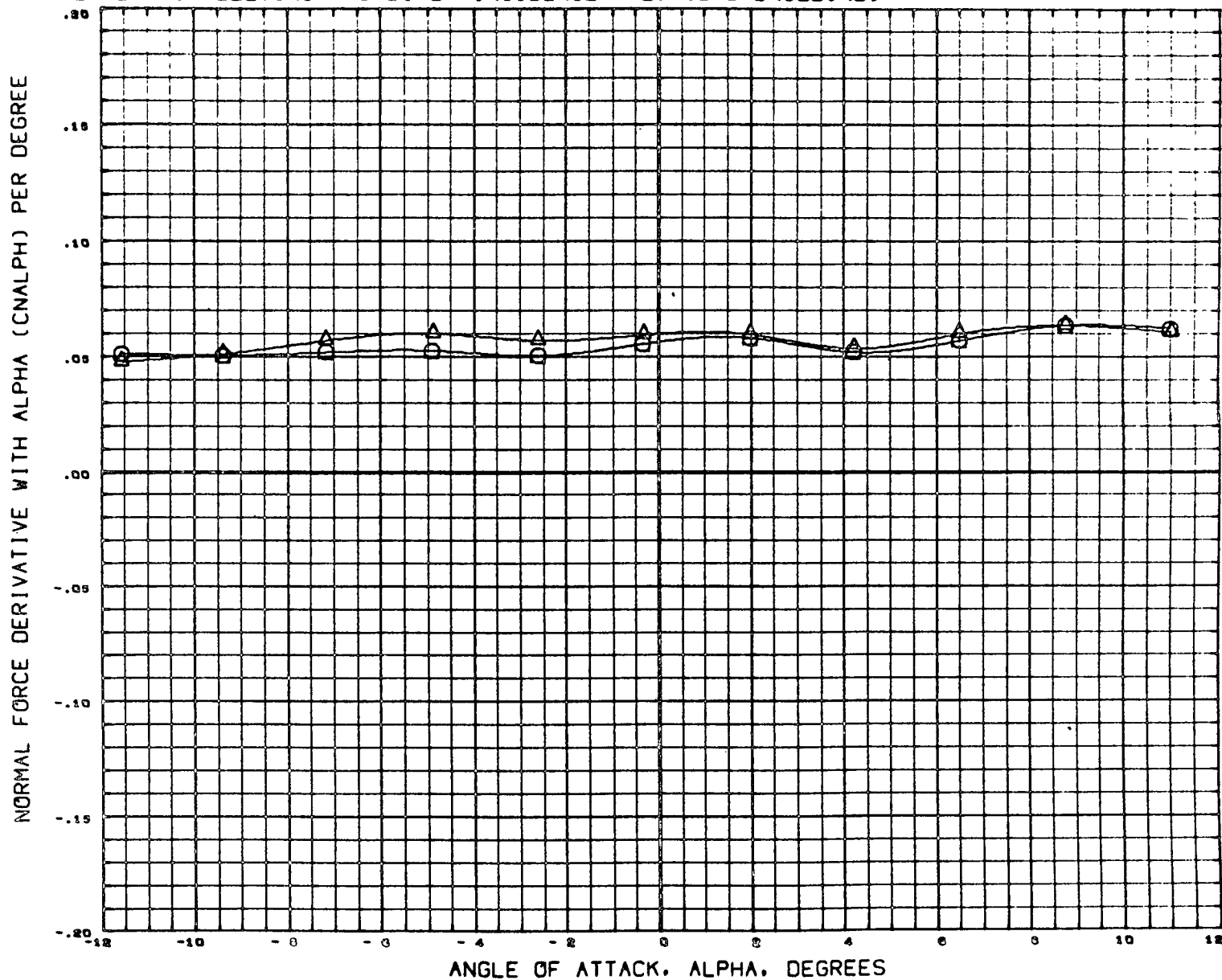
ORBINC	POBITN	BETA	ELVATR
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2.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH .60

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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(13293A)	MSPC490 NR/GD LAUNCH 820C4BW14V8+85W17V17

ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	30 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
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YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

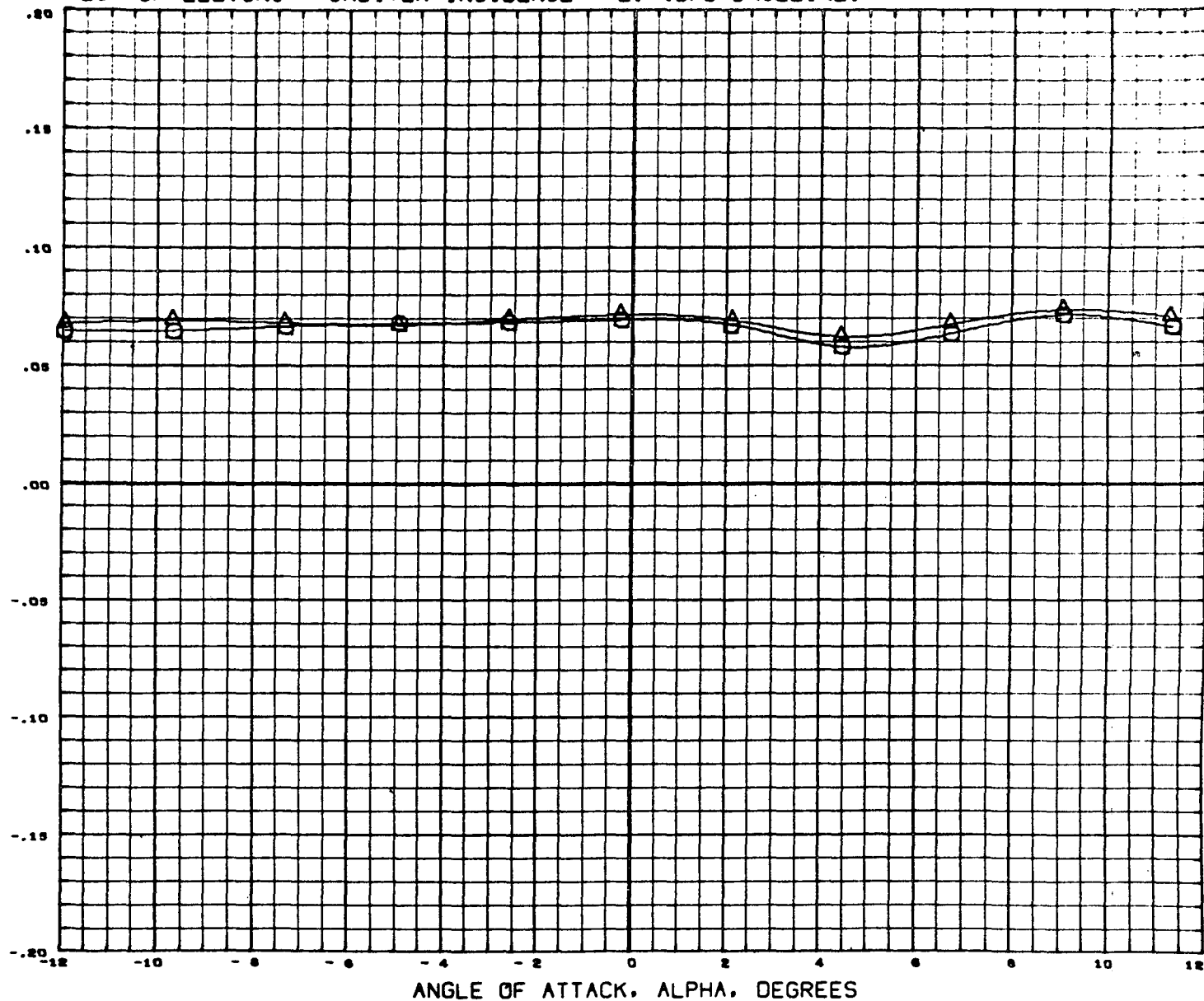
MACH

.90

PAGE 440

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)

NORMAL FORCE DERIVATIVE WITH ALPHA (CNALPH) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(13232A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(13233A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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2.000	4.000	0.000	10.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

MACH 1.10

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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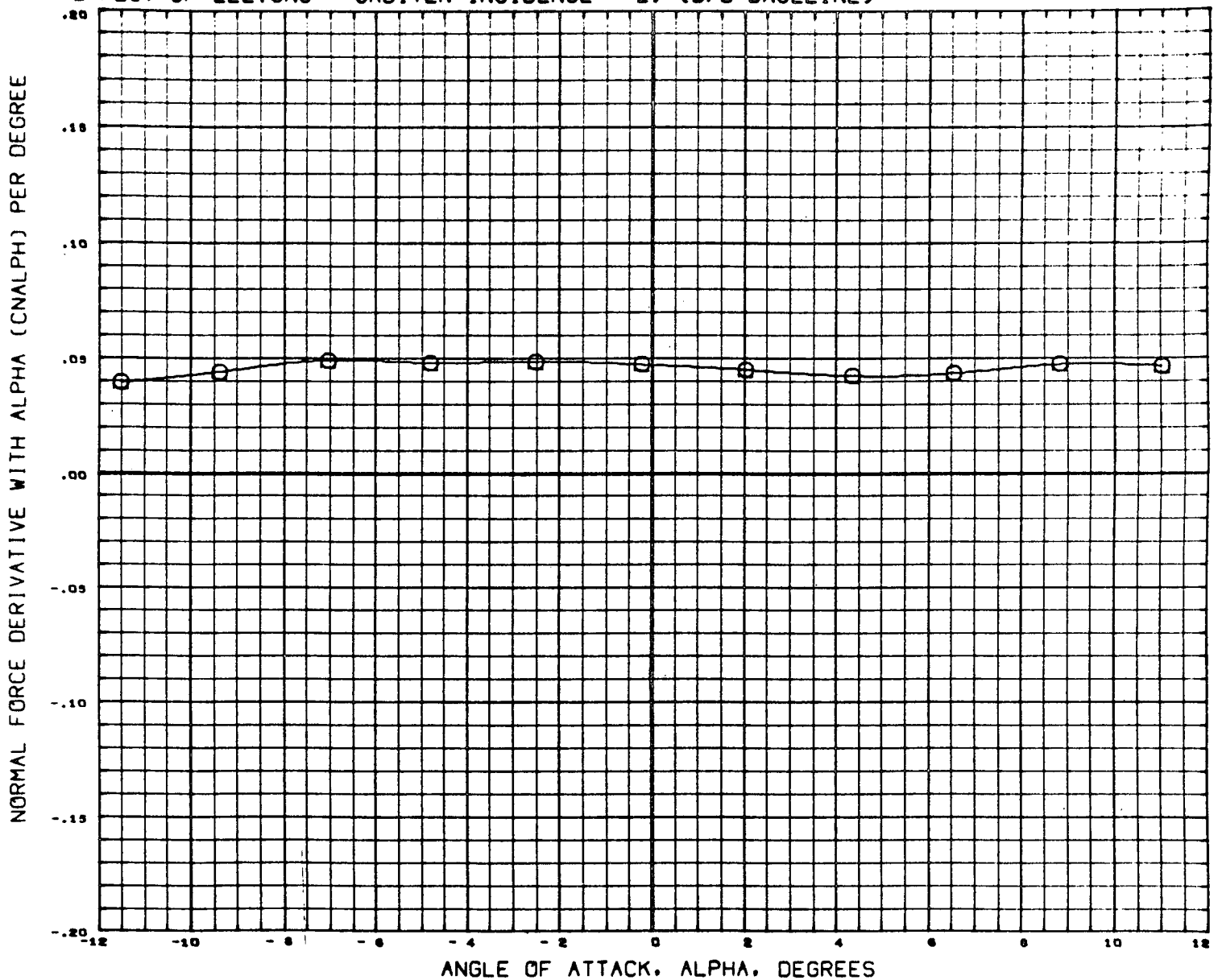
ORGINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREP	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.45

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE)



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (13252A) M3FC490 NR/GD LAUNCH B20C4BW14V6+85W17V17
 (13253A) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR
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2.000	4.000	0.000	10.000

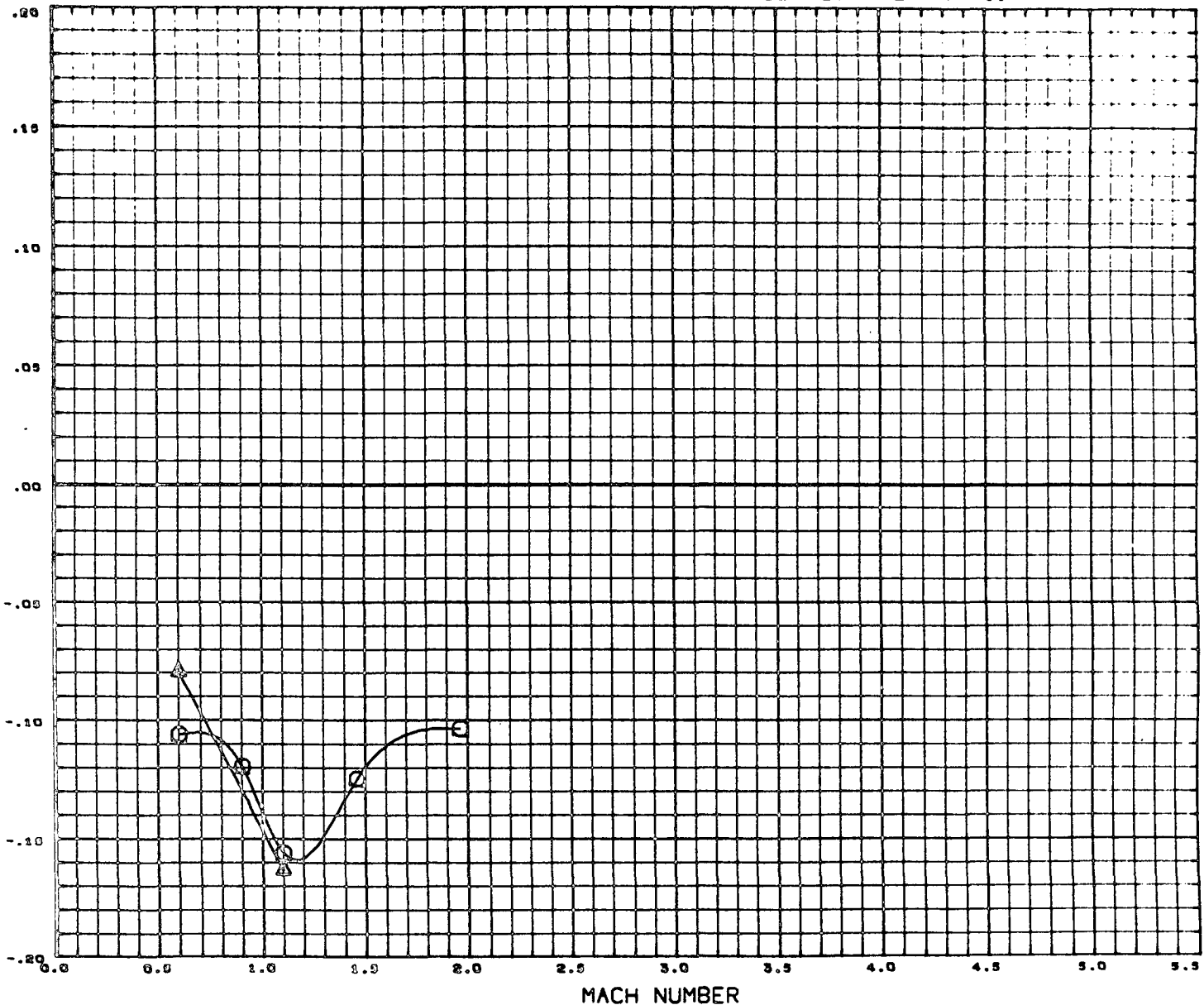
REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.96

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE) ALPHA = 0.

PITCHING MOMENT DERIVATIVE WITH ALPHA (CLMALP) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3292A)	MSPC490 NR/GD LAUNCH B20C48W14V8+B3W17V17
(J3293A)	MSPC490 NR/GD LAUNCH B20C48W14V8+B3W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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2.000	4.000	0.000	10.000	LREF 3.0990 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE) ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3252A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17
(J3253A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

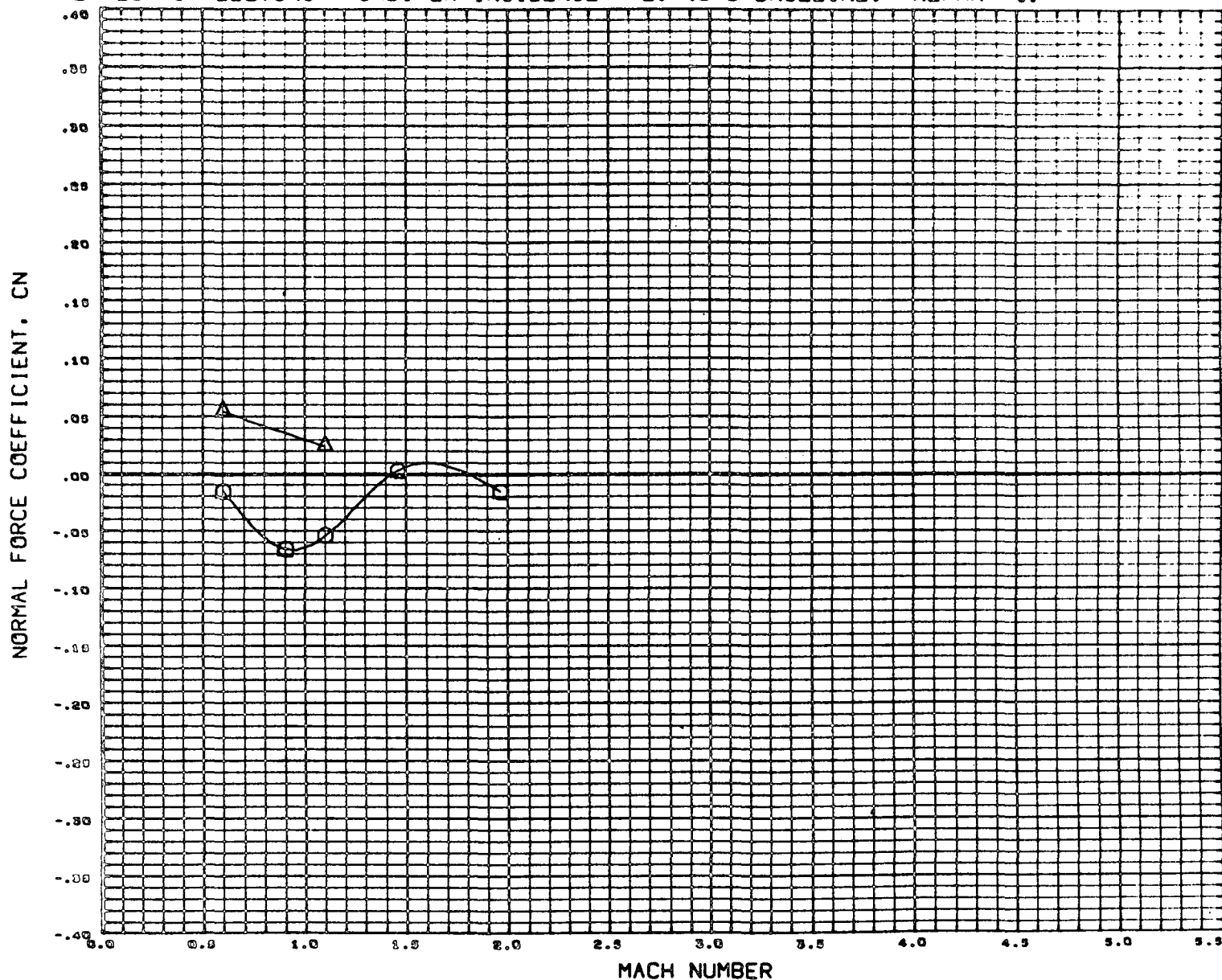
MACH NUMBER



ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
2.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	4.000	0.000	10.000	LREF 3.0990 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA .00

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EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE) ALPHA = 0.

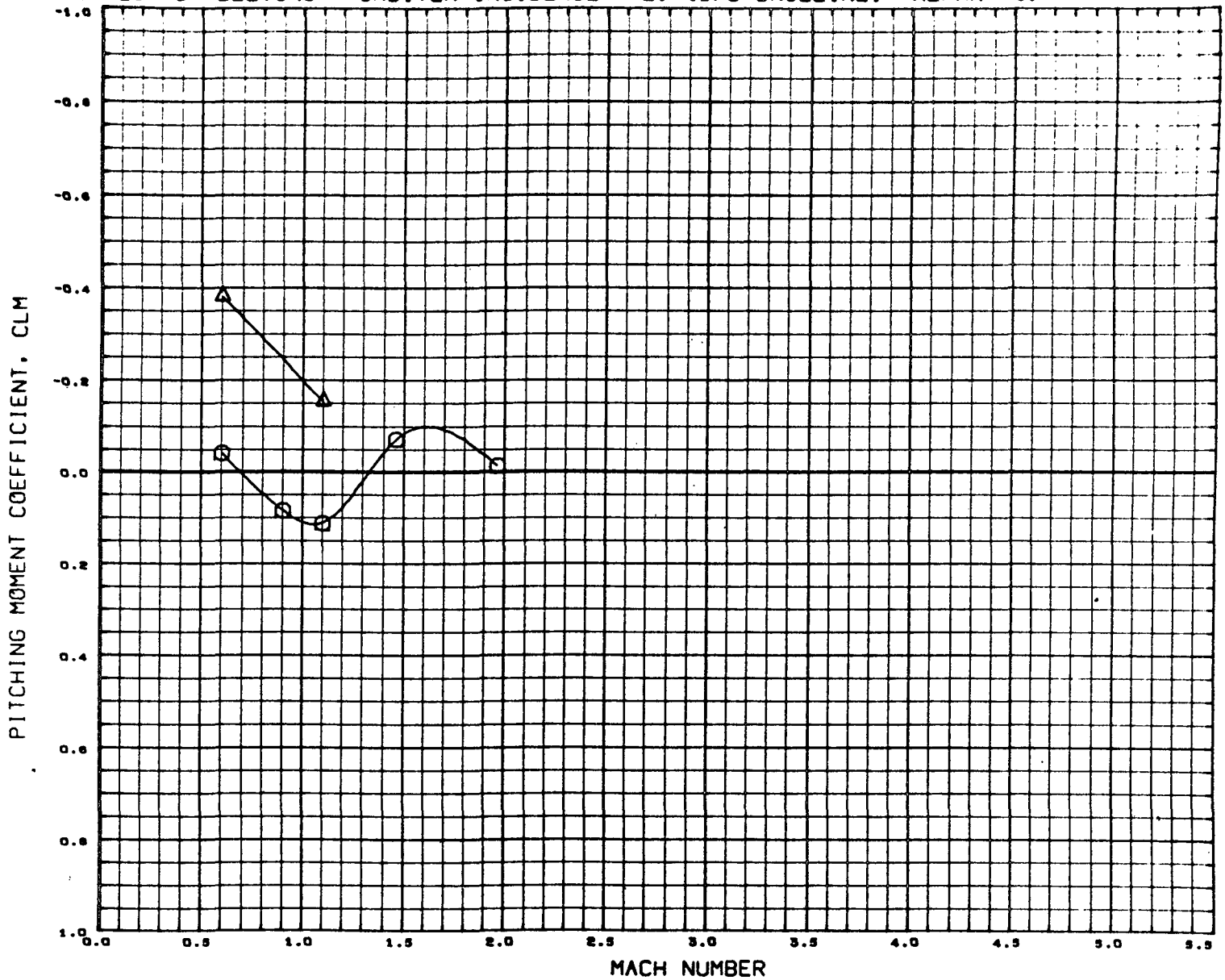


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (K3292A)  MSFC400 NR/GD LAUNCH B20C4BW14V8+B5W17V17
 (K3293A)  MSFC400 NR/GD LAUNCH B20C4BW14V8+B5W17V17

ORBITR	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
2.000	4.000	0.000	0.000	SREF	15.6560 SQ IN
2.000	4.000	0.000	10.000	LREF	3.0950 INCHES
				BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

ALPHA .00

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE) ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(K3252A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17
(K3253A)	MSFC490 NR/GD LAUNCH B20C4BW14V6+B5W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
2.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	4.000	0.000	10.000	LREF 3.0990 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0039 SCALE

ALPHA .00

EFFECT OF ELEVONS - ORBITER INCIDENCE = 2. (B/B BASELINE) ALPHA = 0.

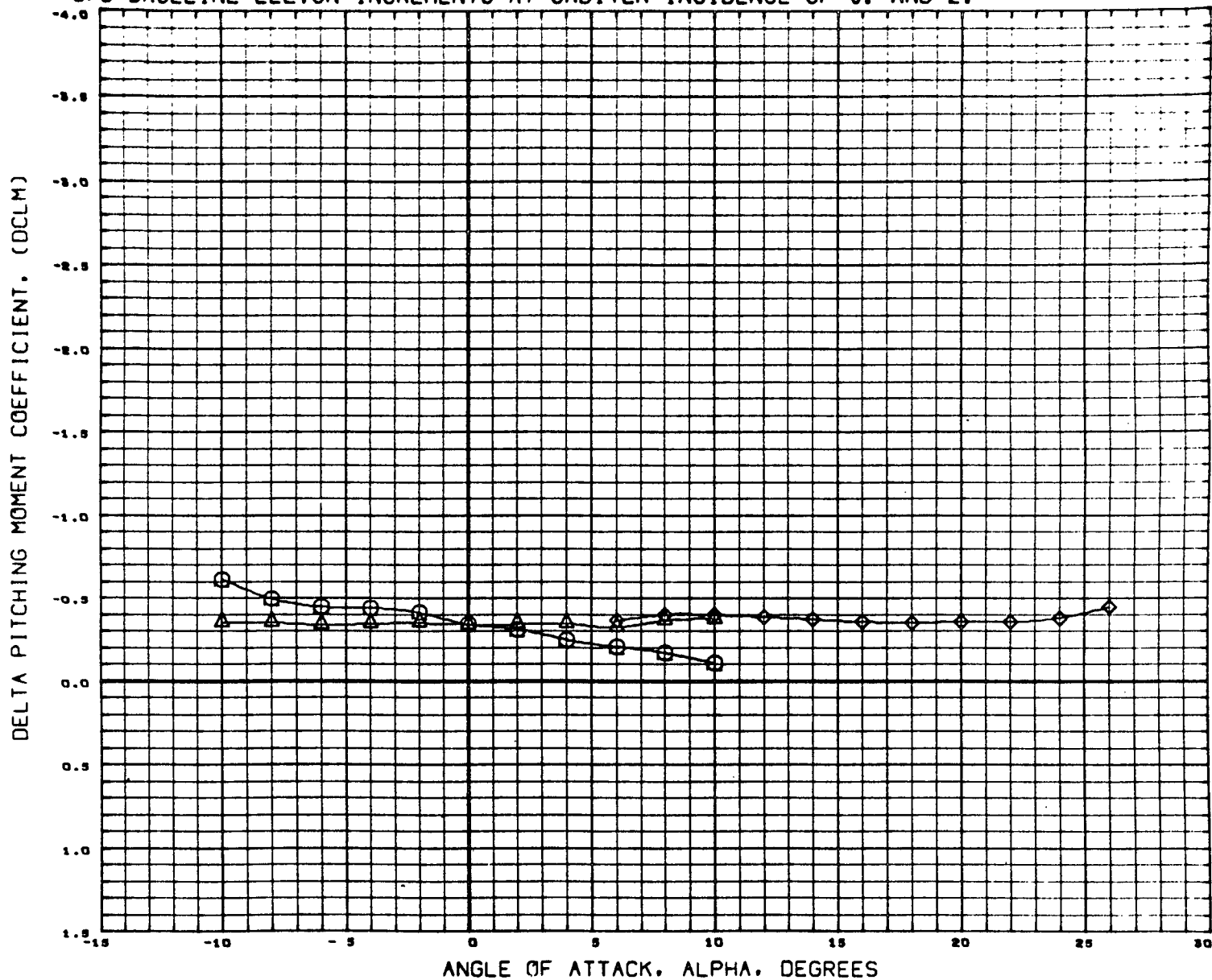


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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(K3293A)	MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
2.000	4.000	0.000	0.000	SREF 15.6560 SQ IN
2.000	4.000	0.000	10.000	LREF 3.0950 INCHES
				BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0035 SCALE

ALPHA 4.00

B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.

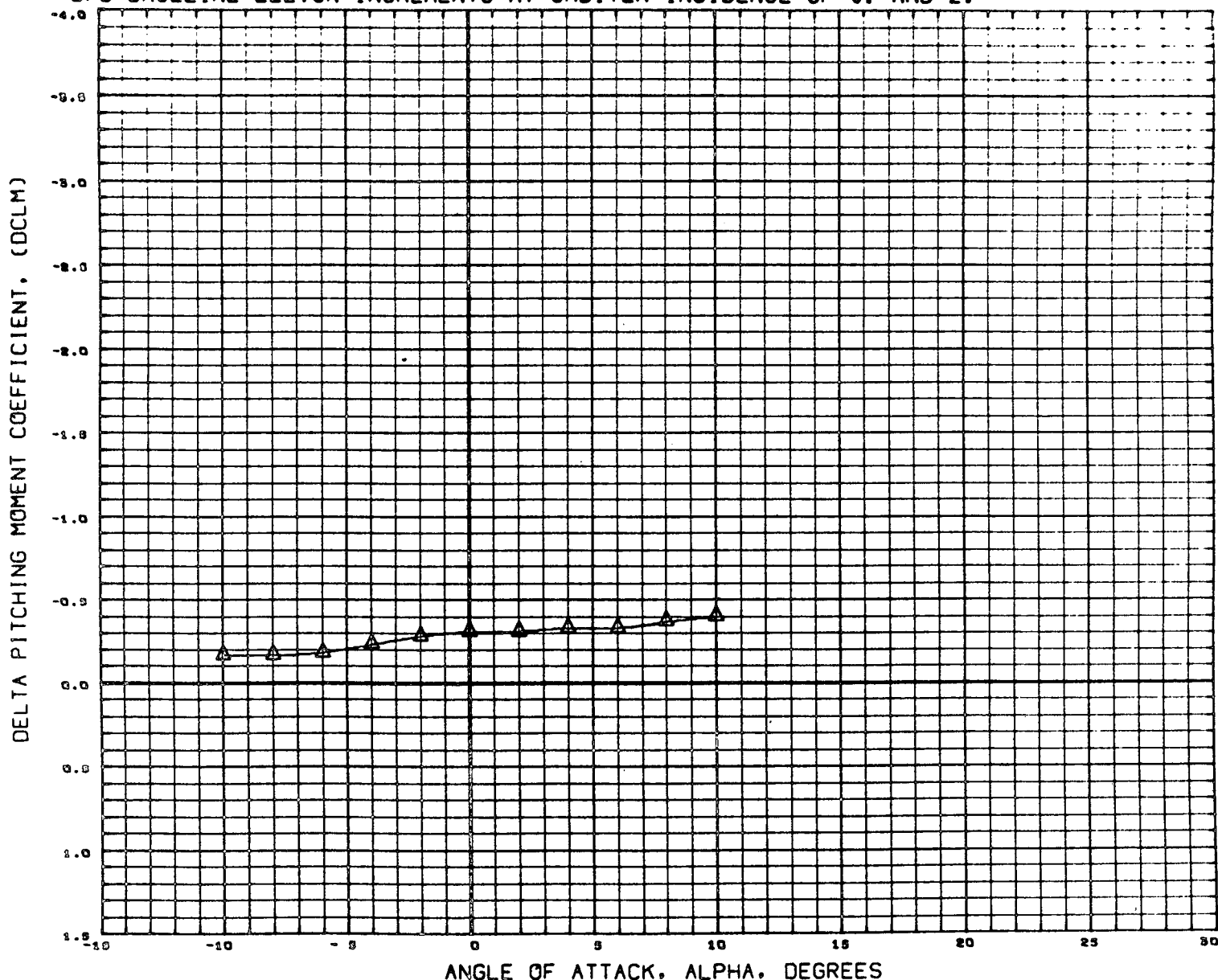


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
(A32201)	A3253A-A3252A B20C4BW14V6 + B5W17V17	2.000	4.000	0.000	10.000	SREF	15.6560	SQ IN
(A32202)	A3251A-A3250A B20C4BW14V6 + B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0950	INCHES
(A32203)	A3251B-A3250B B20C4BW14V6 + B5W17V17	0.000	4.000	0.000	10.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0033	SCALE

MACH .60

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B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A32201) DATA NOT AVAILABLE FOR ALL CONDITIONS
 (A32202) A3251A-A3250A B20C48W14V8 + B3W17V17
 (A32203) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC POSITN BETA ELVATR
 2.000 4.000 0.000 10.000
 0.000 4.000 0.000 10.000
 0.000 4.000 0.000 10.000

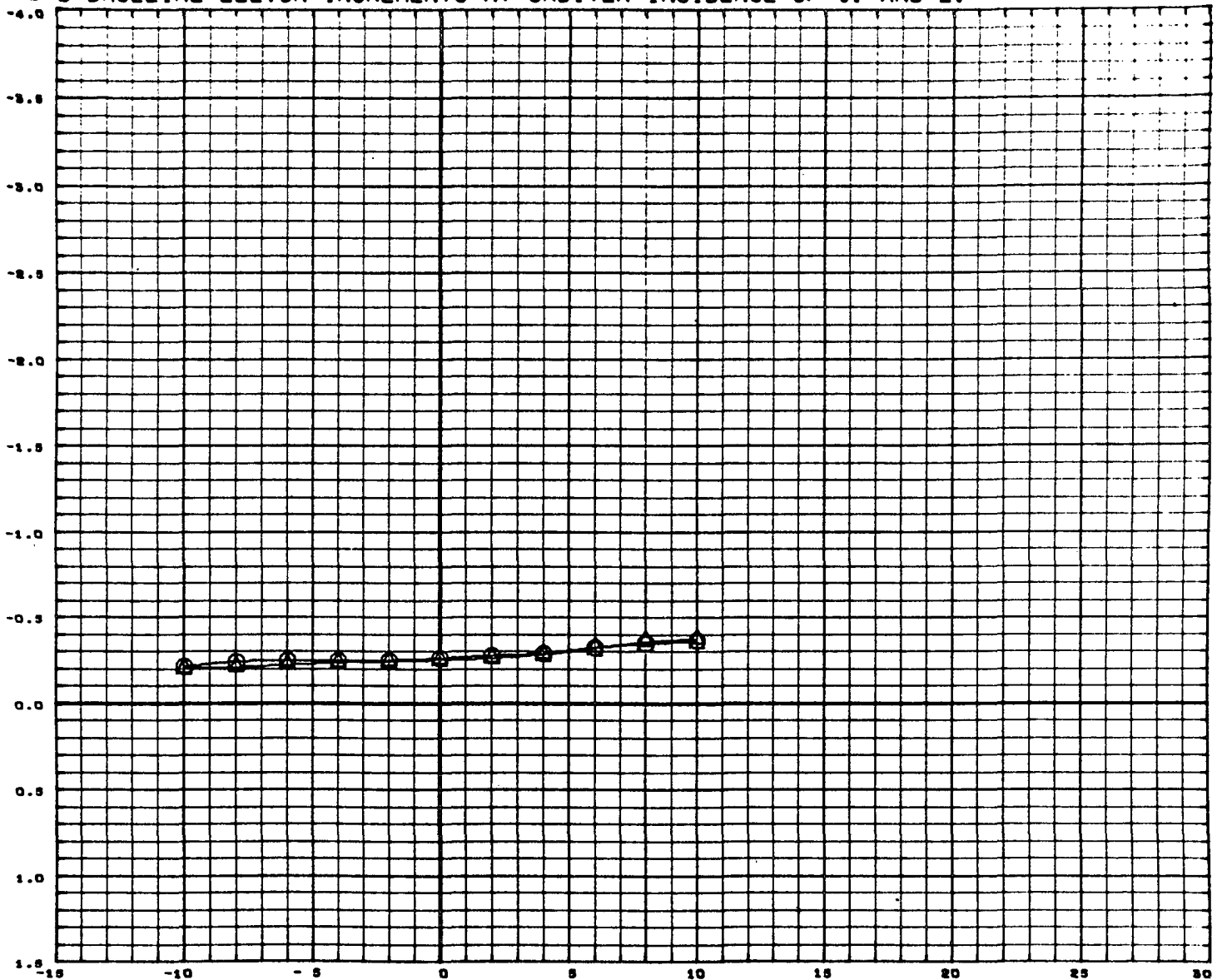
REFERENCE INFORMATION
 SREF 15.6560 SQ IN
 LREF 3.0950 INCHES
 BREF 6.0990 INCHES
 XMRP 0.0000
 YMRP 0.0000
 ZMRP 0.0000
 SCALE 0.0035 SCALE

MACH .90

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B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.

DELTA PITCHING MOMENT COEFFICIENT, (DCLM)



ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A32201) ○ A3253A-A3252A B20C4BW14V6 + B5W17V17
 (A32202) △ A3251A-A3250A B20C4BW14V6 + B5W17V17
 (A32203) ◇ DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
2.000	4.000	0.000	10.000	SREF	15.6560 SQ IN
0.000	4.000	0.000	10.000	LREF	3.0930 INCHES
0.000	4.000	0.000	10.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.10

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B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(A32201)	DATA NOT AVAILABLE FOR ALL CONDITIONS	2.000	4.000	0.000	10.000	SREF	15.6560 SQ IN
(A32202)	A3251A-A3250A B20C48W14V8 + B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
(A32203)	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	4.000	0.000	10.000	BREF	6.0990 INCHES
						XMRP	0.0000
						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.46

PAGE 452

B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.



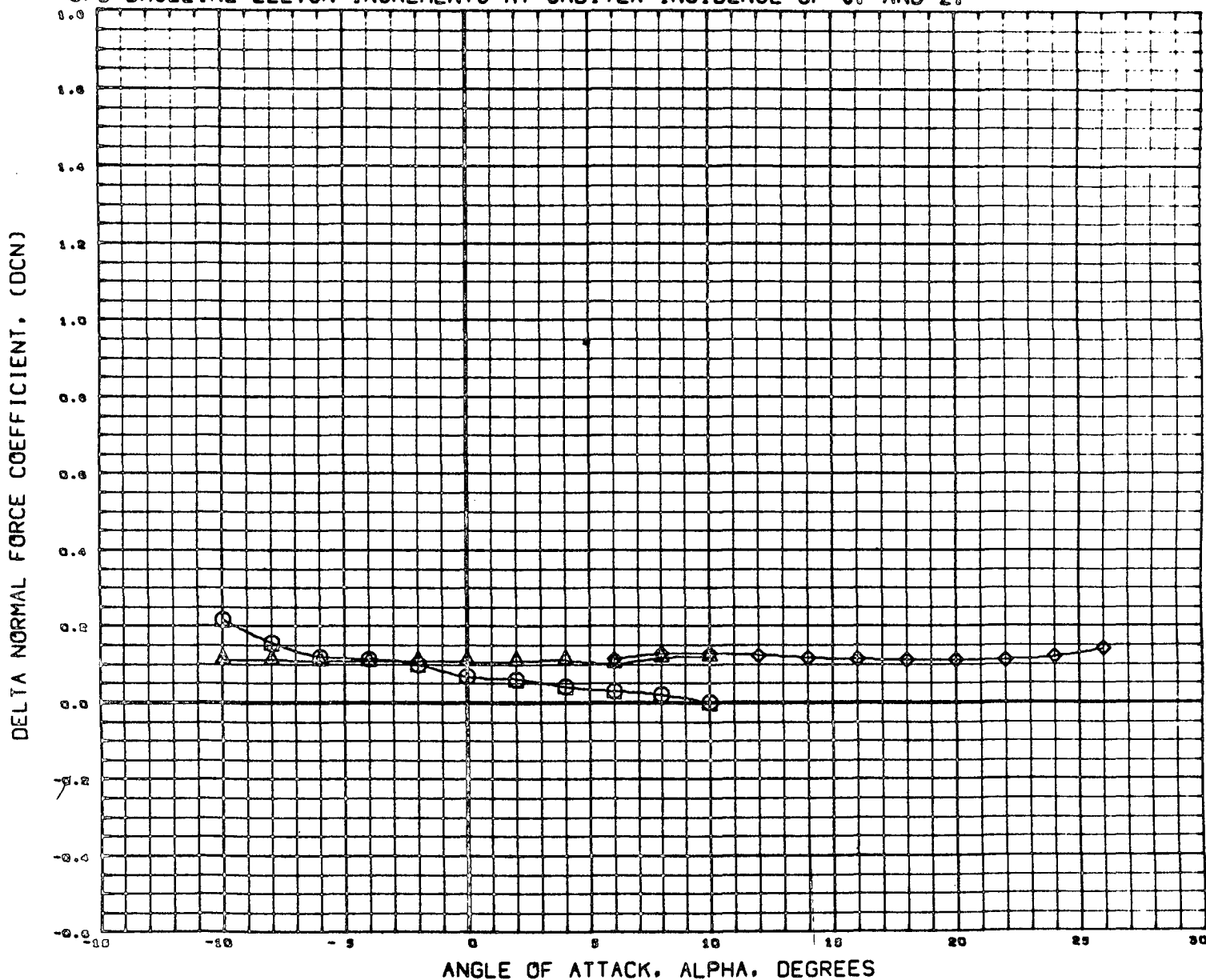
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 (A32202) A3231A-A3230A B20C4BW14V8 + B5W17V17
 (A32203) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
2.000	4.000	0.000	10.000	SREF	15.6360 SQ IN
0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
0.000	4.000	0.000	10.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
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MACH 1.96

PAGE 453

B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.

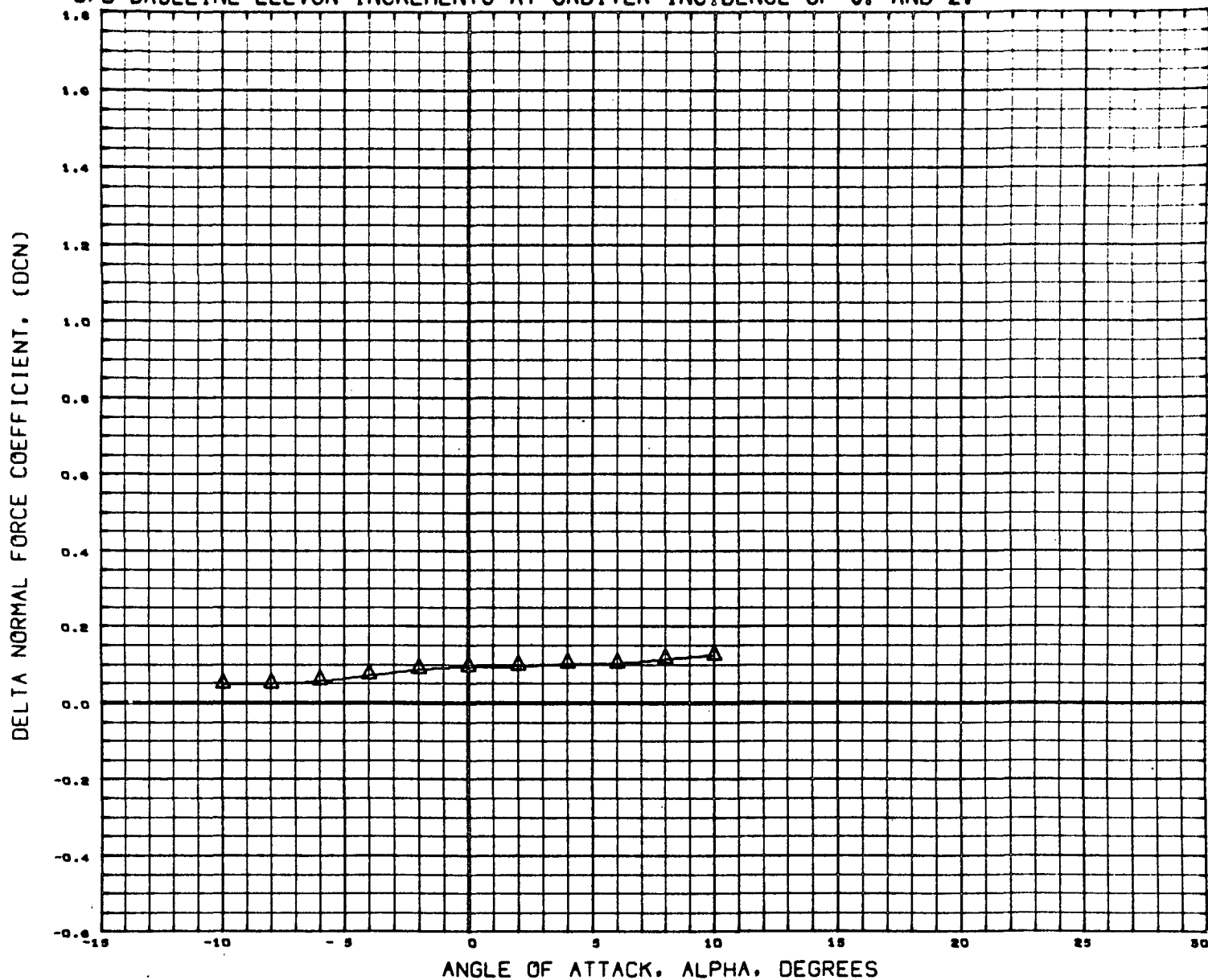


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(A32202)	A3221A-A3220A B20C48W14V8 + B3W17V17	0.000	4.000	0.000	10.000	LREF	3.0990 INCHES
(A32203)	A3221B-A3220B B20C48W14V8 + B3W17V17	0.000	4.000	0.000	10.000	BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH .60

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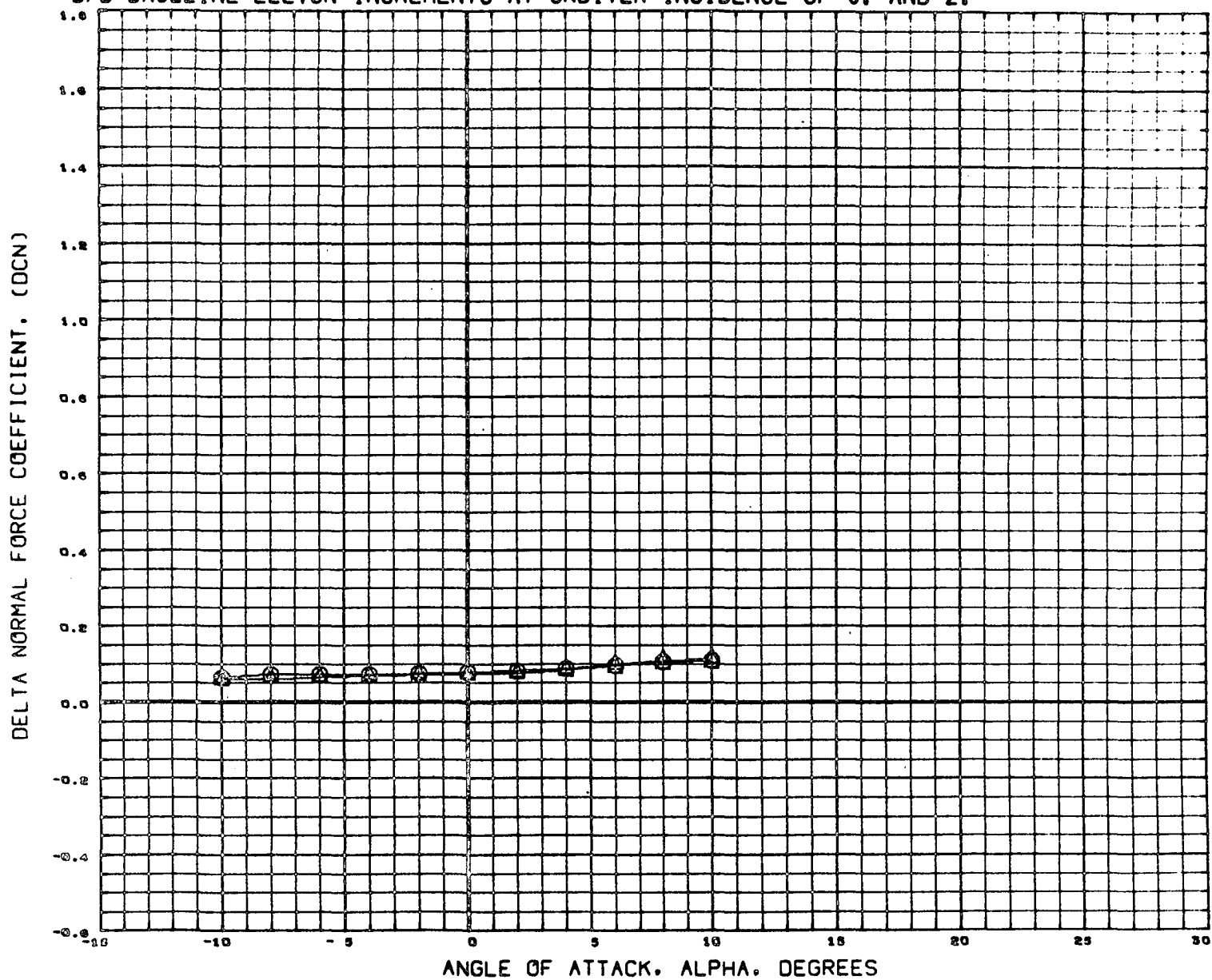
B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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(A32202)	A3251A-A3250A B20C4BW14V8 + B5W17V17
(A32203)	DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
2.000	4.000	0.000	10.000	SREF	15.6560 SQ IN
0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
0.000	4.000	0.000	10.000	BREF	6.0990 INCHES
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				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
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(A32202)	A3291A-A3290A B20C4BW14V8 + B5W17V17
(A32203)	DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
2.000	4.000	0.000	10.000	SREF 15.6960 SQ IN
0.000	4.000	0.000	10.000	LREF 3.0990 INCHES
0.000	4.000	0.000	10.000	BREF 6.0990 INCHES
				XMRP 0.0000
				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0039 SCALE

MACH 1.10

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B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.



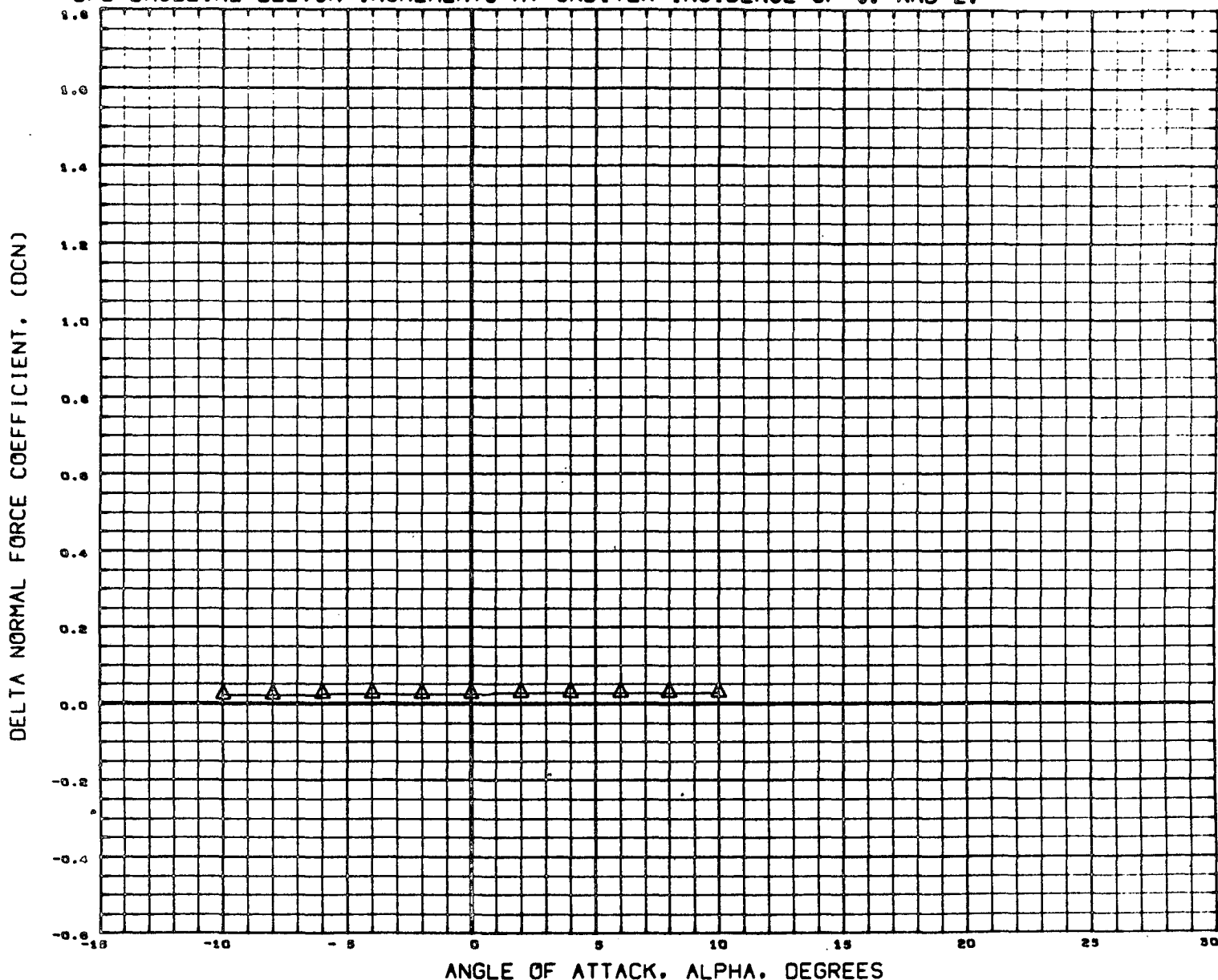
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 (A32203) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION		
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0.000	4.000	0.000	10.000	LREF	3.0950	INCHES
0.000	4.000	0.000	10.000	BREF	6.0990	INCHES
				XMRP	0.0000	
				YMRP	0.0000	
				ZMRP	0.0000	
				SCALE	0.0035	SCALE

MACH 1.46

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B/B BASELINE ELEVEN INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A32201) DATA NOT AVAILABLE FOR ALL CONDITIONS

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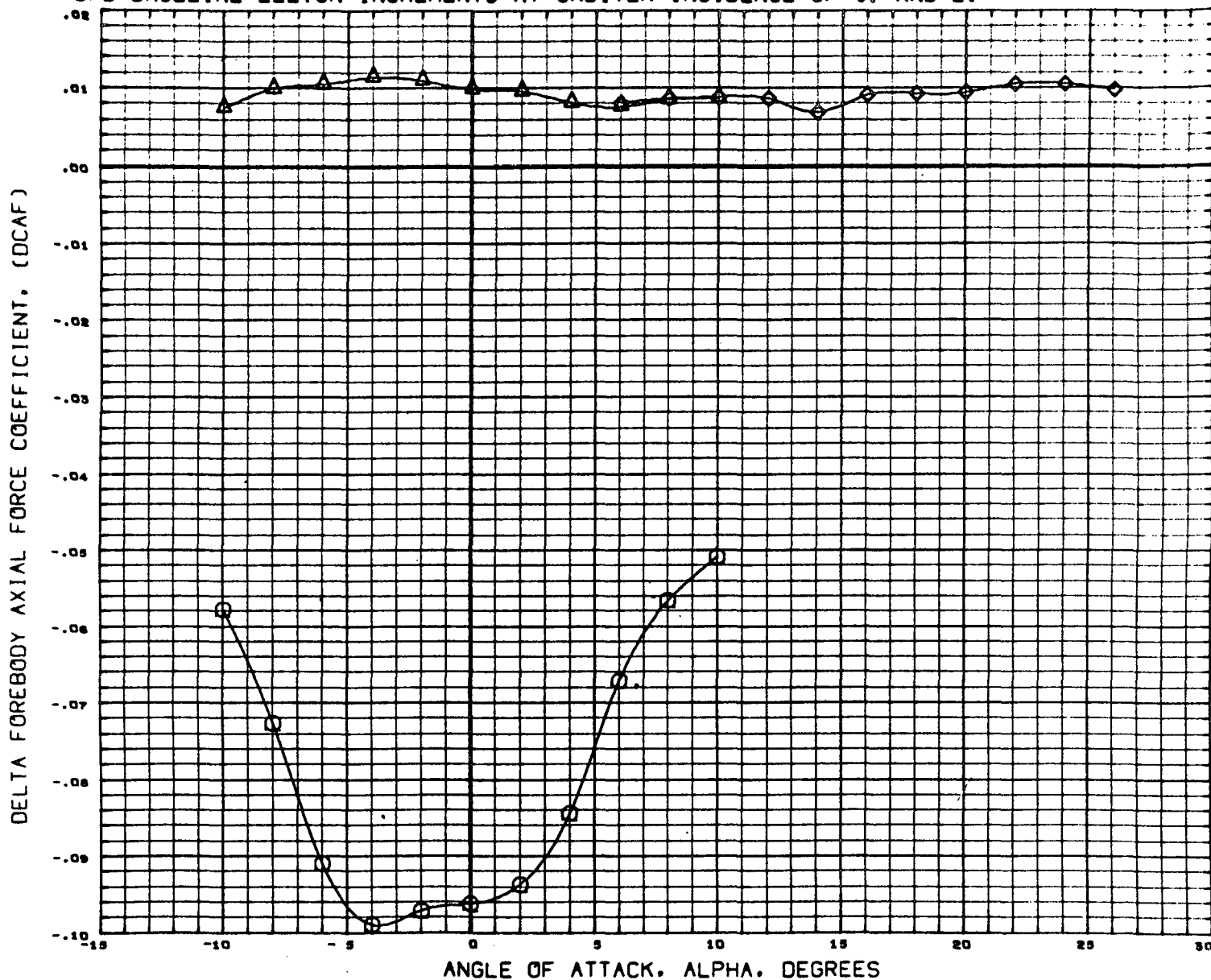
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0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
0.000	4.000	0.000	10.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

PAGE 458

B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.

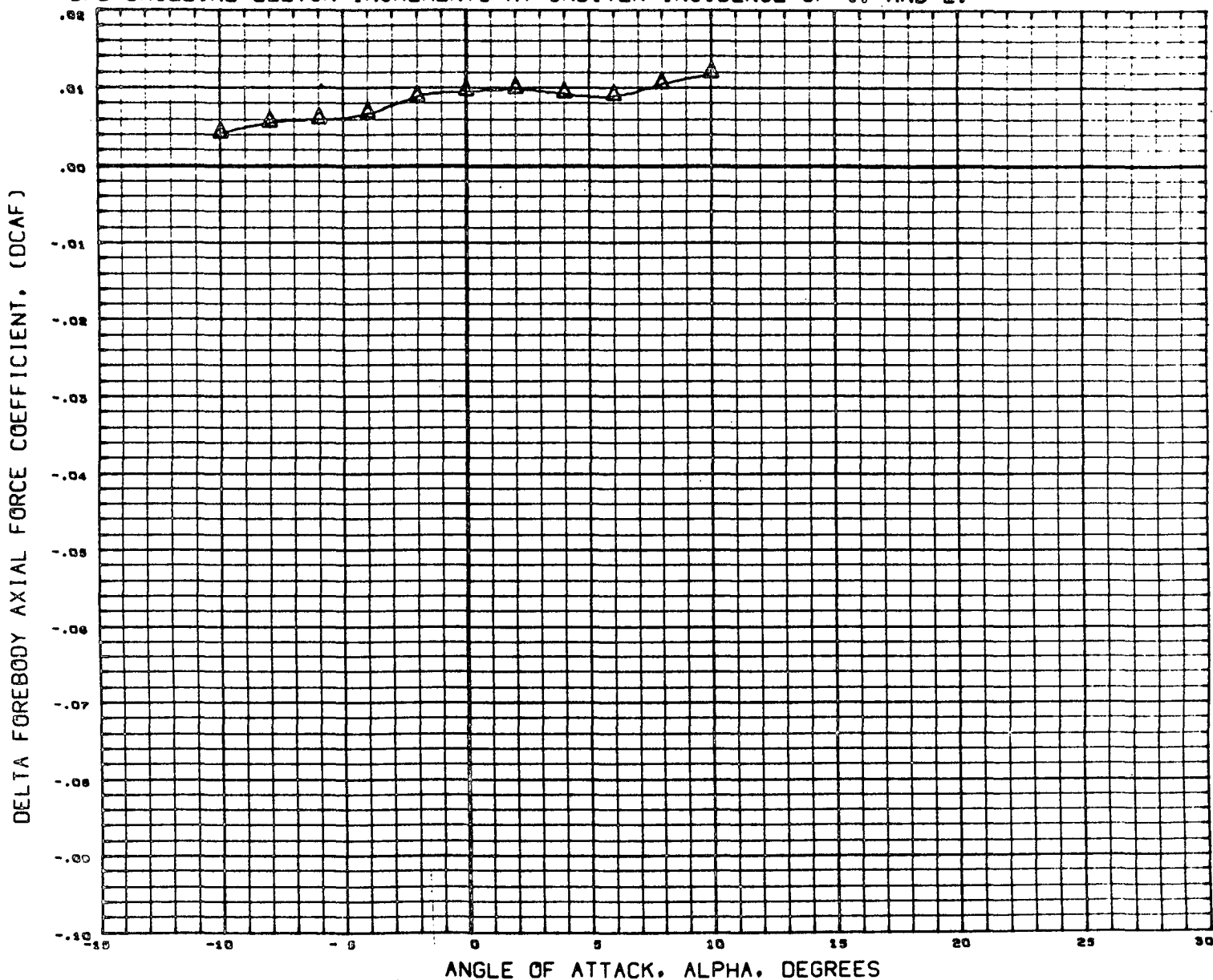


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(A32201)	A3253A-A3252A B20C48W14V8 + B5W17V17	2.000	4.000	0.000	10.000	SREF	15.6560	SQ IN
(A32202)	A3251A-A3250A B20C48W14V8 + B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0990	INCHES
(A32203)	A3251B-A3250B B20C48W14V8 + B5W17V17	0.000	4.000	0.000	10.000	BREF	6.0990	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
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MACH .60

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B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.



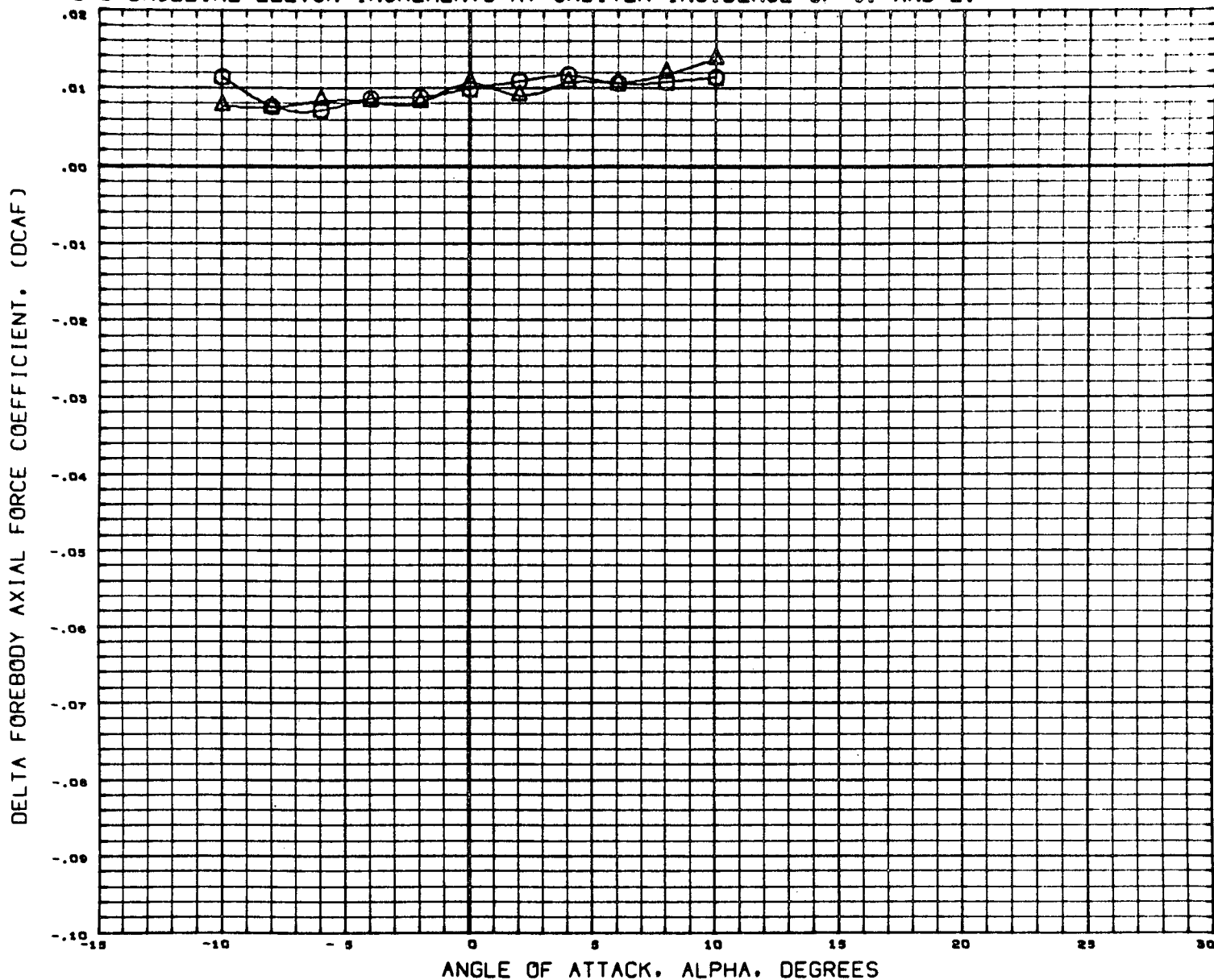
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 (A32203) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBIT	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
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0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
0.000	4.000	0.000	10.000	BREF	6.0990 INCHES
				XMRP	0.0000
				YMRP	0.0000
				ZMRP	0.0000
				SCALE	0.0035 SCALE

MACH .90

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B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.

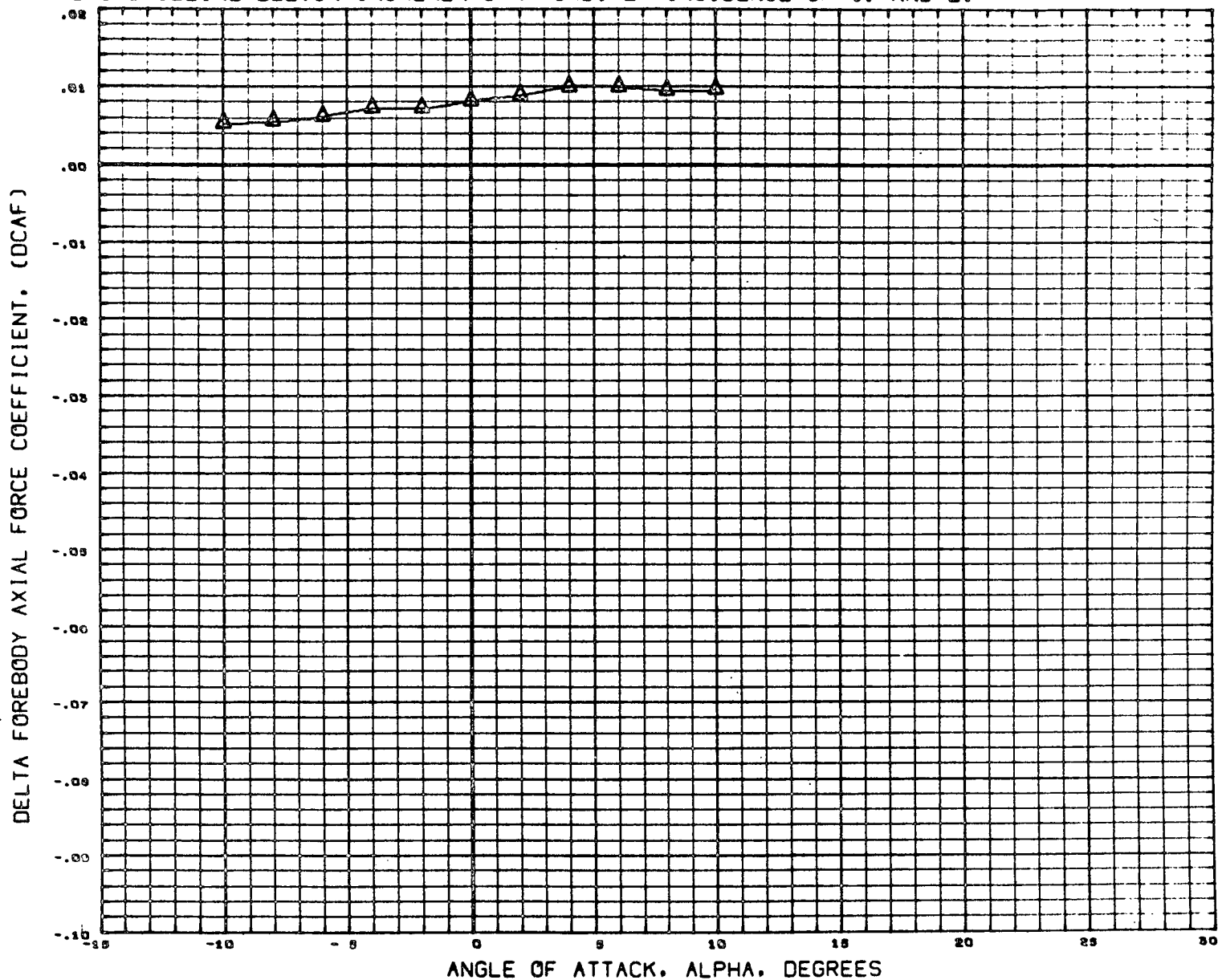


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
(A32201)	A3253A-A3252A B20C48W14V8 + B5W17V17	2.000	4.000	0.000	10.000	SREF	15.6560 SQ IN
(A32202)	A3251A-A3250A B20C48W14V8 + B5W17V17	0.000	4.000	0.000	10.000	LREF	3.0990 INCHES
(A32203)	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	4.000	0.000	10.000	BREF	6.0990 INCHES
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						YMRP	0.0000
						ZMRP	0.0000
						SCALE	0.0035 SCALE

MACH 1.10

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B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (A32202) A3231A-A3230A B20C4BW14V8 + B5W17V17
 (A32203) DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION
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0.000	4.000	0.000	10.000	LREF 3.0990 INCHES
0.000	4.000	0.000	10.000	BREF 6.0990 INCHES
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				YMRP 0.0000
				ZMRP 0.0000
				SCALE 0.0033 SCALE

MACH 1.46

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B/B BASELINE ELEVON INCREMENTS AT ORBITER INCIDENCE OF 0. AND 2.



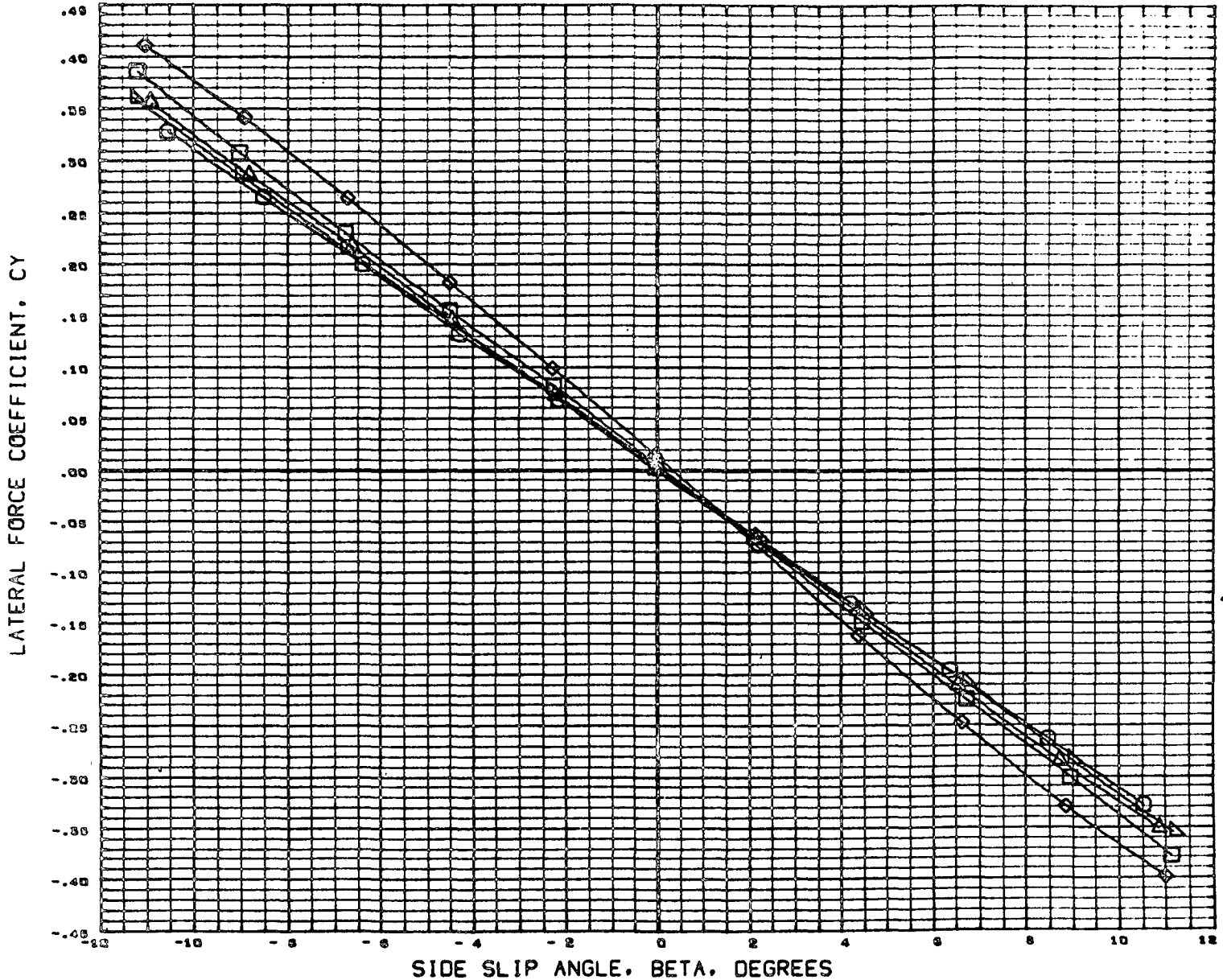
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 (A32202) △ A3251A-A3250A B20C4BW14V6 + B5W17V17
 (A32203) ◇ DATA NOT AVAILABLE FOR ALL CONDITIONS

ORBINC	POSITN	BETA	ELVATR	REFERENCE INFORMATION	
2.000	4.000	0.000	10.000	SREF	15.6560 SQ IN
0.000	4.000	0.000	10.000	LREF	3.0950 INCHES
0.000	4.000	0.000	10.000	BREF	6.0990 INCHES
				XMRF	0.0000
				YMRF	0.0000
				ZMRF	0.0000
				SCALE	0.0035 SCALE

MACH 1.96

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LATERAL-DIRECTIONAL CHARACTERISTICS - P/B NOSE TO NOSE



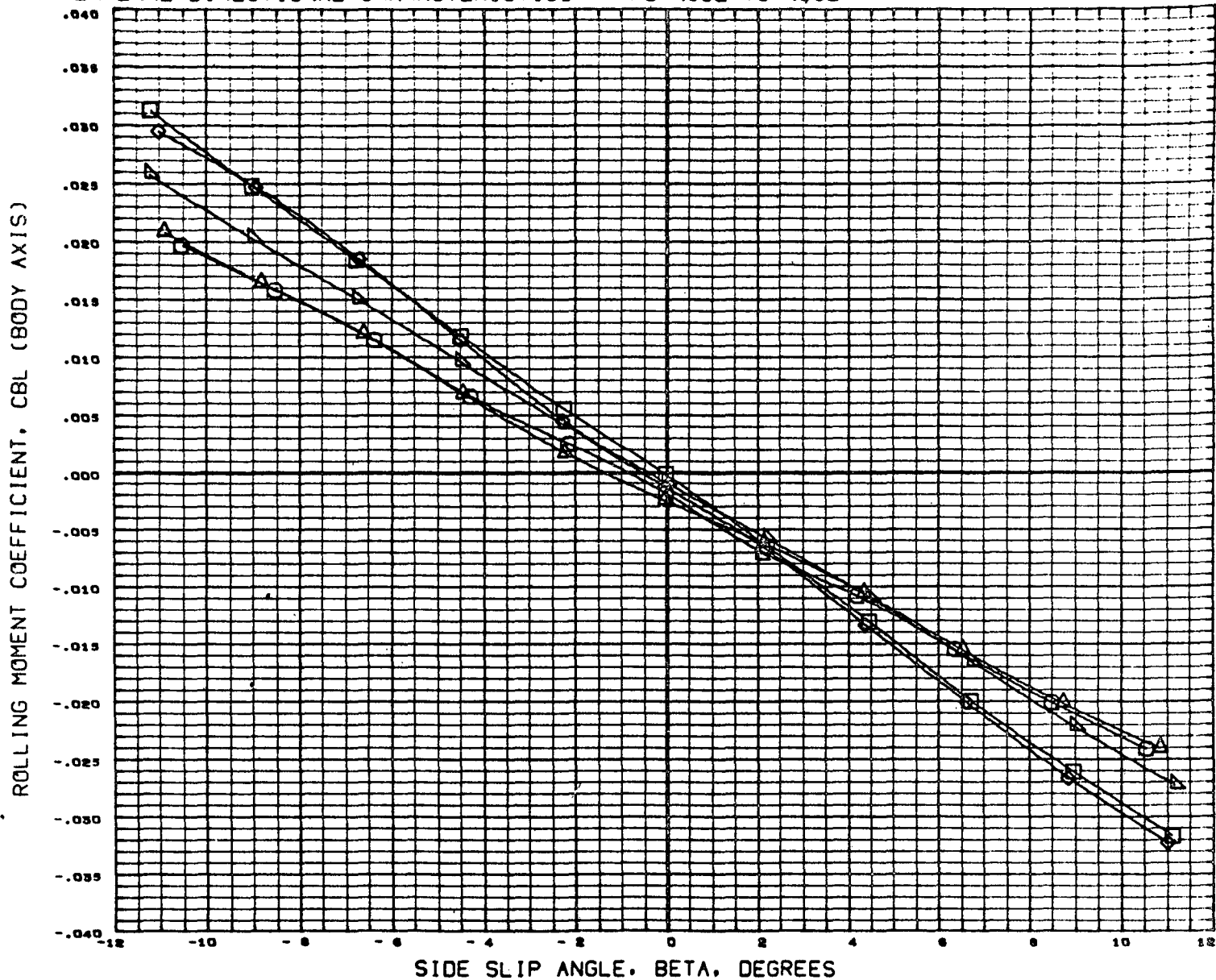
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△	0.991	0.000	0.000	0.000	0.000	SREF	6.0990	INCHES
◇	1.099	0.000	0.000	0.000	0.000	XMRP	0.0000	
◻	1.465	0.000	0.000	0.000	0.000	YMRP	0.0000	
◼	1.953	0.000	0.000	0.000	0.000	ZMRP	0.0000	
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DATA HIST. CODE MV

MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

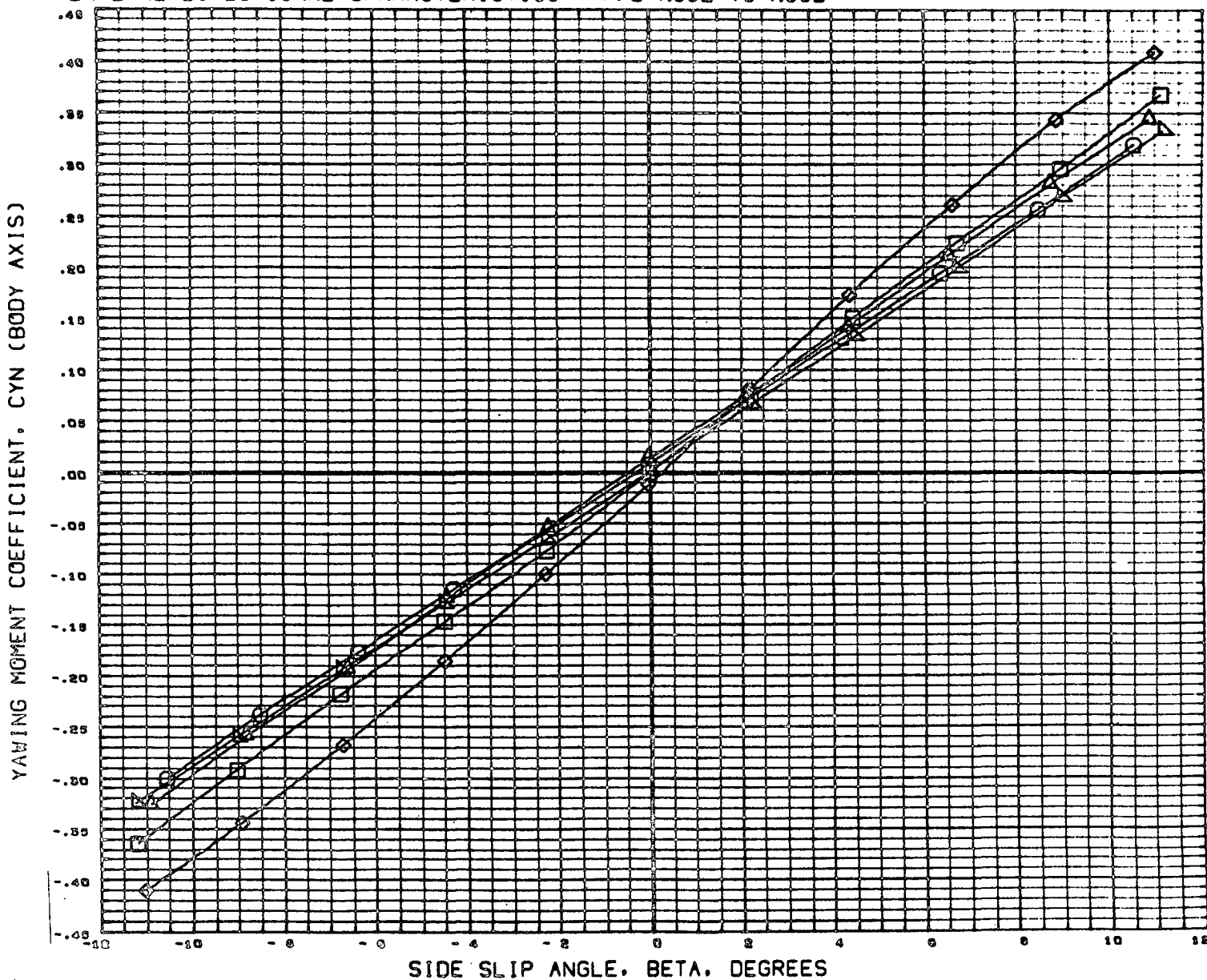
(A3238C) 20 JUL 72 PAGE 464

LATERAL-DIRECTIONAL CHARACTERISTICS - P/B NOSE TO NOSE



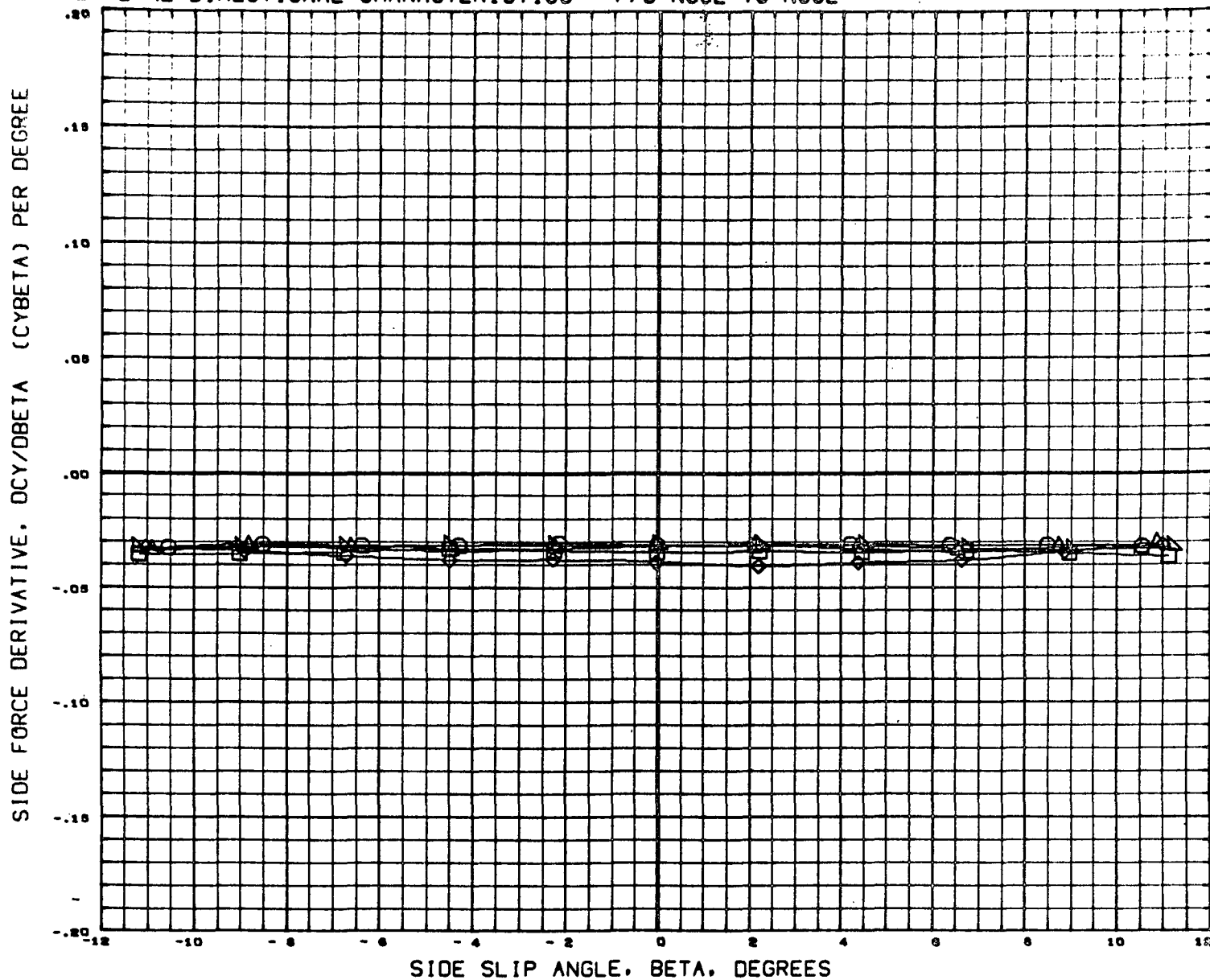
SYMBOL	MACH		PARAMETRIC VALUES				REFERENCE INFORMATION		
○	0.599	ALPHA	0.000	POSITN	2.000		SREP	15.6560	80 IN
△	0.901	ORBINC	0.000	ELVATR	0.000		LREP	3.0990	INCHES
◇	1.099	AILRON	0.000	CANARD	0.000		BREP	6.0990	INCHES
□	1.485	ELVORB	0.000	RUDORB	0.000		XMRP	0.0000	
◻	1.953						YMRP	0.0000	
							ZMRP	0.0000	
							SCALE	0.0035	SCALE
		DATA HIST. CODE	MV						

LATERAL-DIRECTIONAL CHARACTERISTICS - P/B NOSE TO NOSE



SYMBOL	MACH		PARAMETRIC VALUES				REFERENCE INFORMATION		
○	0.900	ALPHA	0.000	POSITN	2.000		SRFP	15.6560	50 IN
◇	0.001	ORGINC	0.000	ELVATR	0.000		LRFP	3.0050	INCHES
□	1.000	ATLRON	0.000	CANARD	0.000		BRFP	6.0090	INCHES
△	1.400	ELVORG	0.000	RUDORG	0.000		XMRP	0.0000	
▽	1.900						YMRP	0.0000	
							ZMRP	0.0000	
							SCALE	0.0035	SCALE
DATA MIST. CODE MV									

LATERAL-DIRECTIONAL CHARACTERISTICS - P/B NOSE TO NOSE

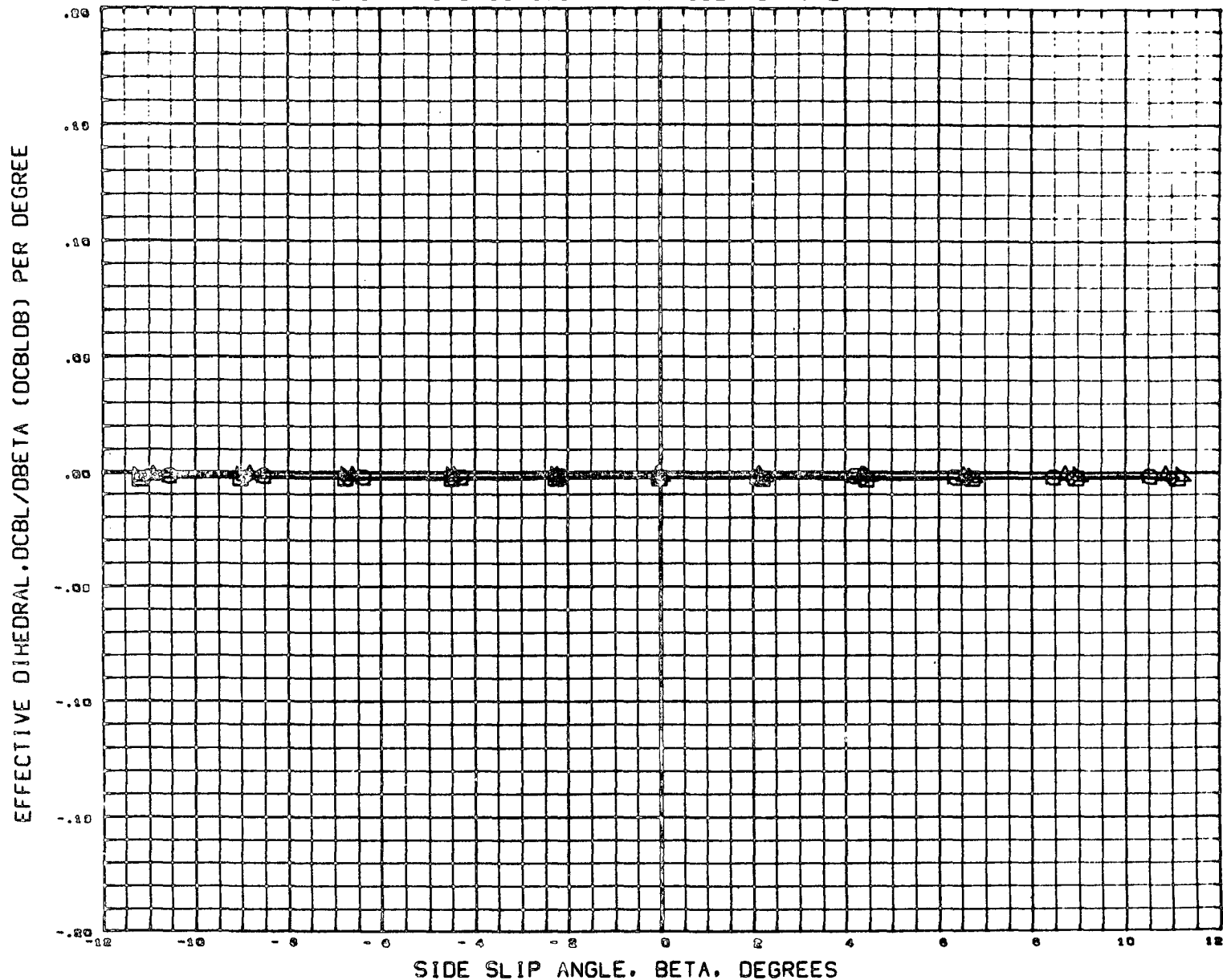


SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	0.599	ALPHA	0.000	POSITN	2.000	SREF	15.6560	50 IN
◇	0.901	ORBINC	0.000	ELVATR	0.000	LREF	3.0950	INCHES
△	1.099	ATLRON	0.000	CANARD	0.000	BREF	6.0990	INCHES
▽	1.465	ELVORB	0.000	RUDORB	0.000	XMRP	0.0000	
◇	1.933					YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE
		DATA HIST. CODE	MVG					

MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

(13238C) 31 JUL 72 PAGE 467

LATERAL-DIRECTIONAL CHARACTERISTICS - P/B NOSE TO NOSE



SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
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	0.901	ORBINC	0.000	ELVATR	0.000	LRFP	3.0950	INCHES
	1.000	ATLRON	0.000	CANARD	0.000	GRFP	6.0990	INCHES
	1.405	ELVORB	0.000	RUDORB	0.000	XMRP	0.0000	
	1.905					YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

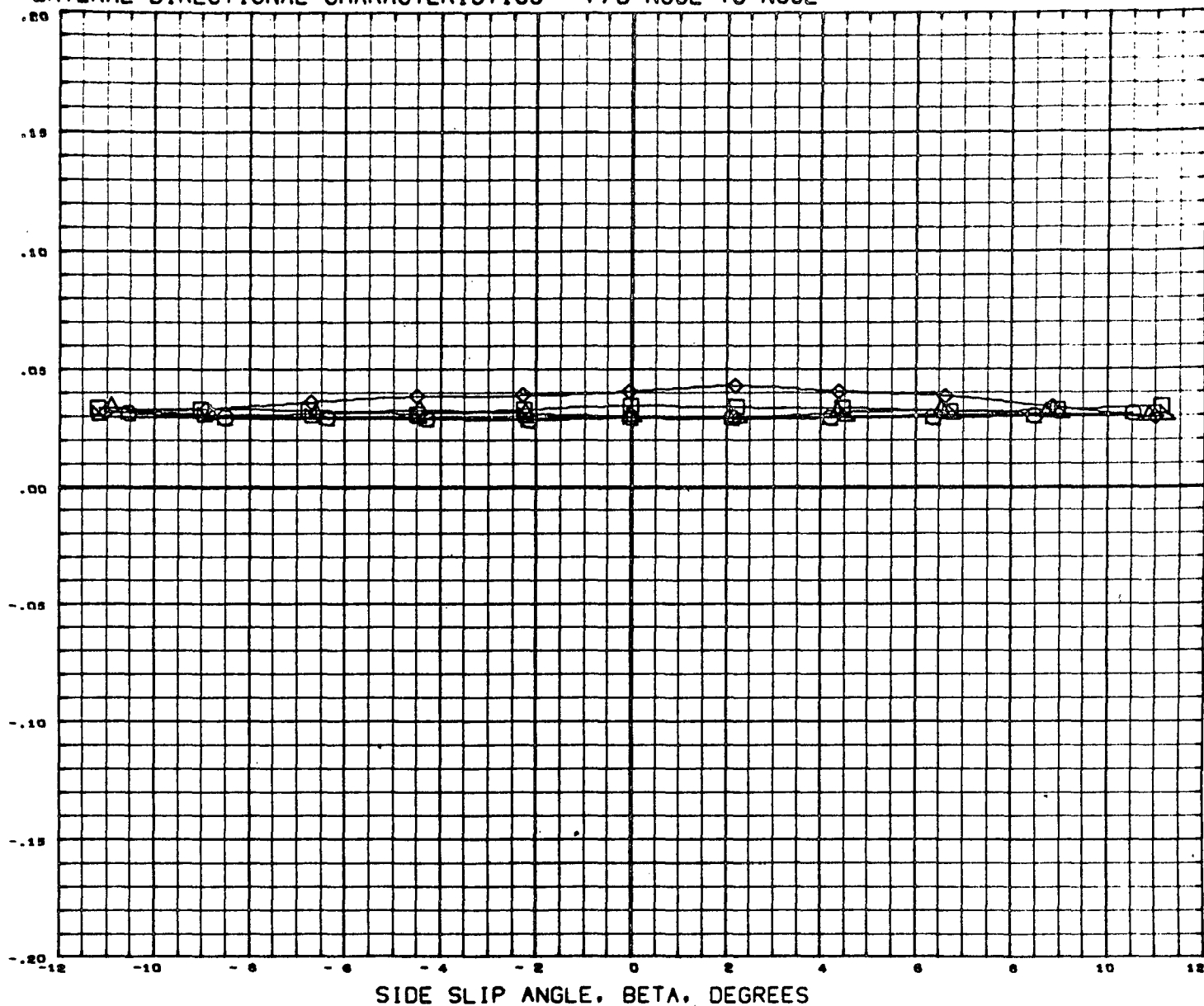
DATA HIST. CODE HVC

MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

(13238C) 31 JUL 72 PAGE 468

LATERAL-DIRECTIONAL CHARACTERISTICS - P/B NOSE TO NOSE

DIRECTIONAL STABILITY DERIVATIVE, DCYN/DBETA, (DCYNDB) PER DEGREE

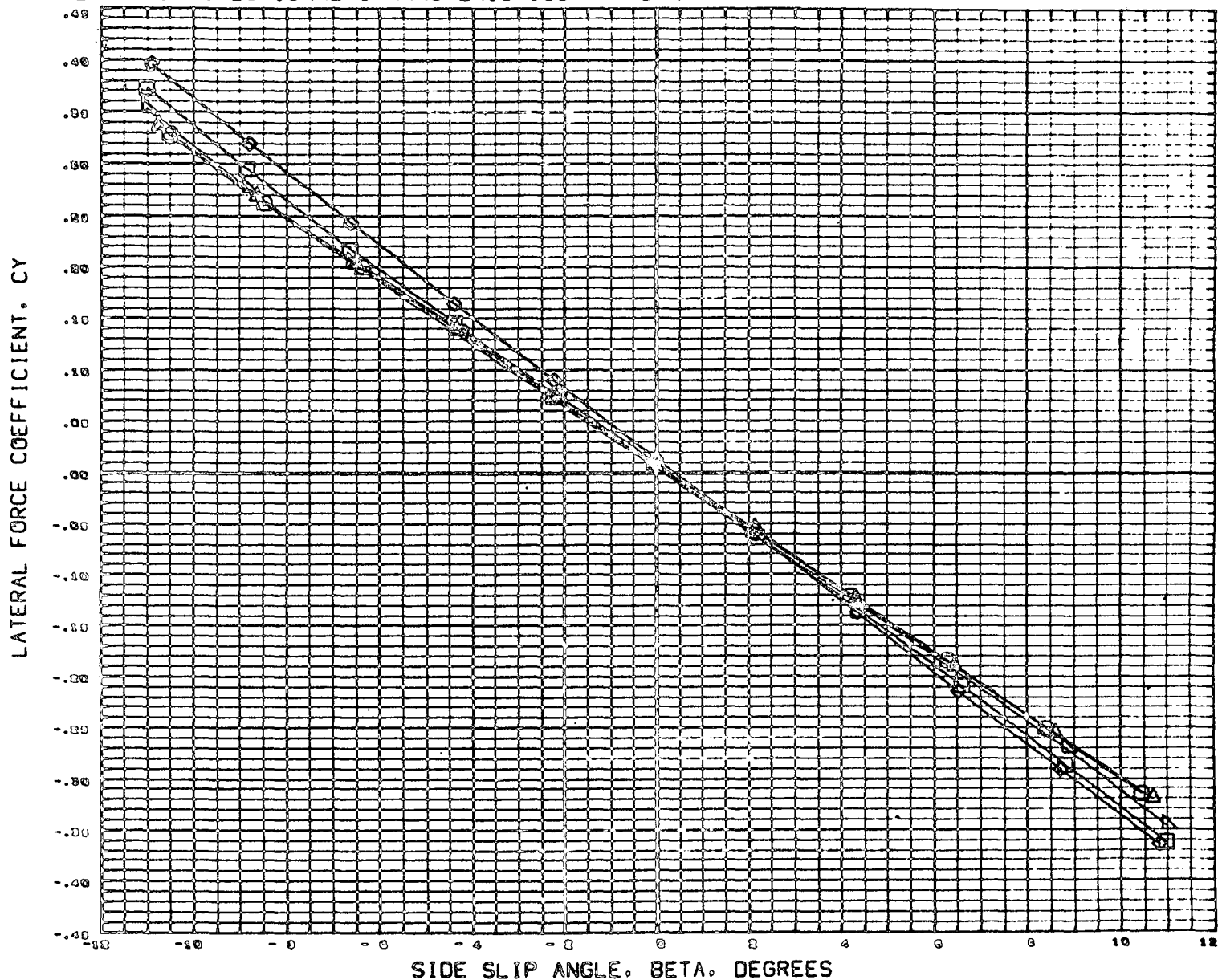


SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
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△	0.901	ORBINC	0.000	ELVATR	0.000	LREF	3.0950	INCHES
◇	1.099	AILRON	0.000	CANARD	0.000	BREF	6.0990	INCHES
○	1.465	ELVORB	0.000	RUDORB	0.000	XMRP	0.0000	
◇	1.953					YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE
		DATA HIST. CODE	MVG					

MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

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LATERAL-DIRECTIONAL CHARACTERISTICS - P/B AFT

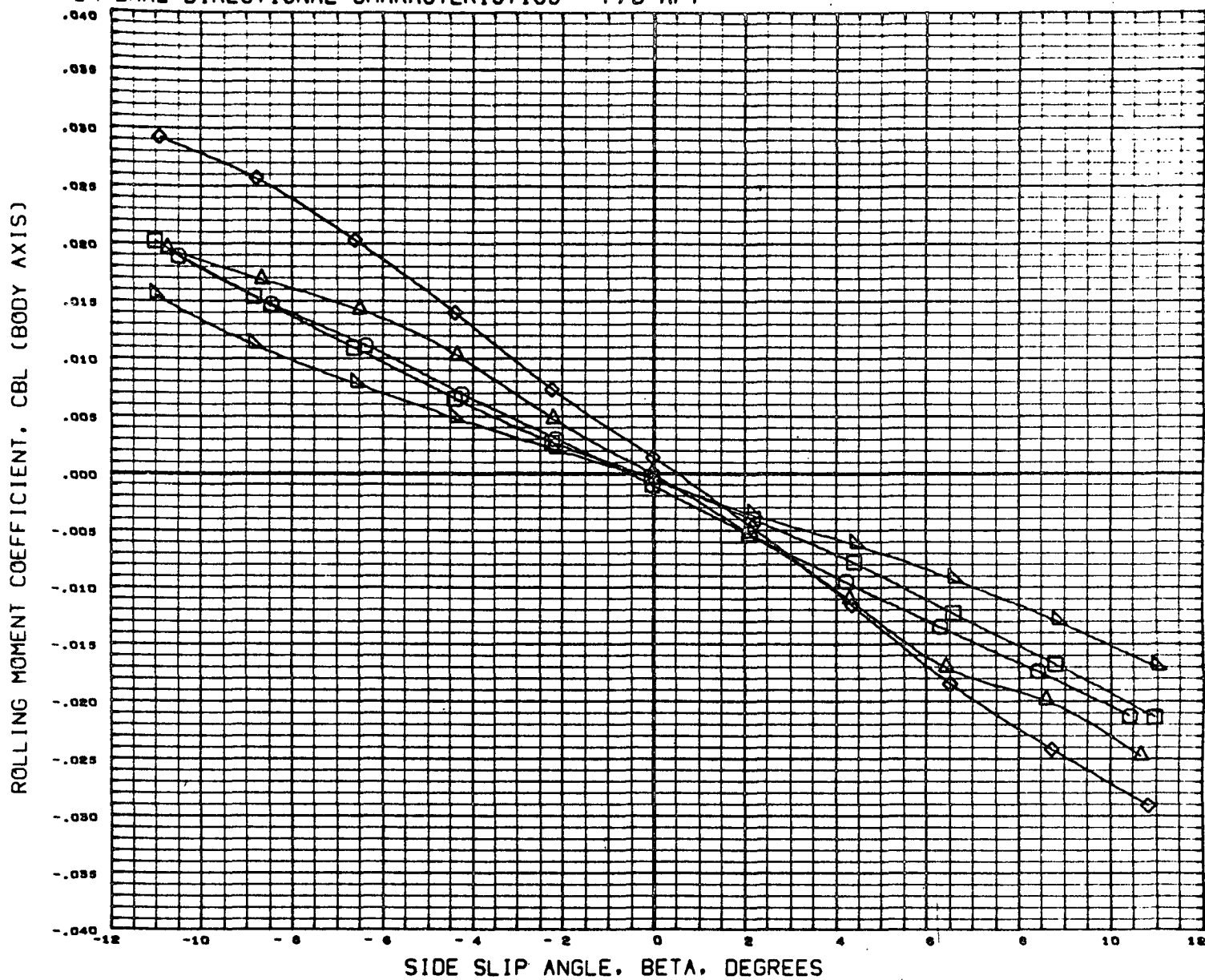


SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	0.001	ALPHA	0.000	POSITN	0.000	BREF	15.6560	30 IN
△	0.000	ORGINC	0.000	ELVATR	0.000	LREF	3.0950	INCHES
◇	1.101	AILRON	0.000	CANARD	0.000	BREF	0.0990	INCHES
◻	1.400	ORBELV	0.000	ORBRUD	0.000	XMRP	0.0000	
	1.090					YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE
		DATA HIST. CODE		MV				

MSFC490 NR/GD LAUNCH B20C48W14V8+B5W17V17

(A3242C) 20 JUL 72 PAGE 470

LATERAL-DIRECTIONAL CHARACTERISTICS - P/B AFT

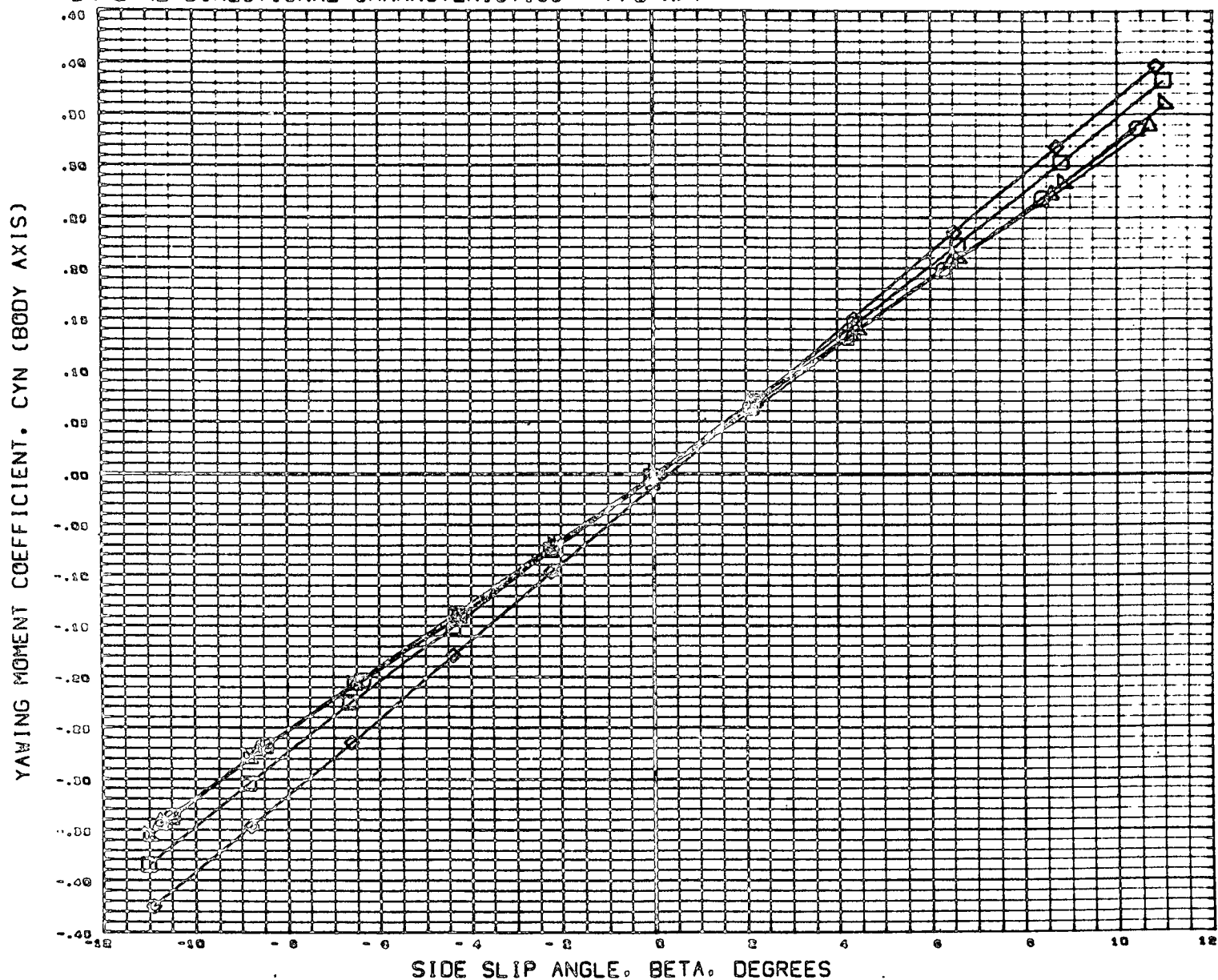


SYMBOL	MACH	PARAMETRIC VALUES
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△	0.898	ORBINC 0.000 ELVATR 0.000
○	1.101	AILRON 0.000 CANARD 0.000
□	1.462	ORBELV 0.000 ORBRUD 0.000
◇	1.956	

DATA HIST. CODE MV

REFERENCE INFORMATION		
SREF	19.6360	30 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0033	SCALE

LATERAL-DIRECTIONAL CHARACTERISTICS - P/B AFT

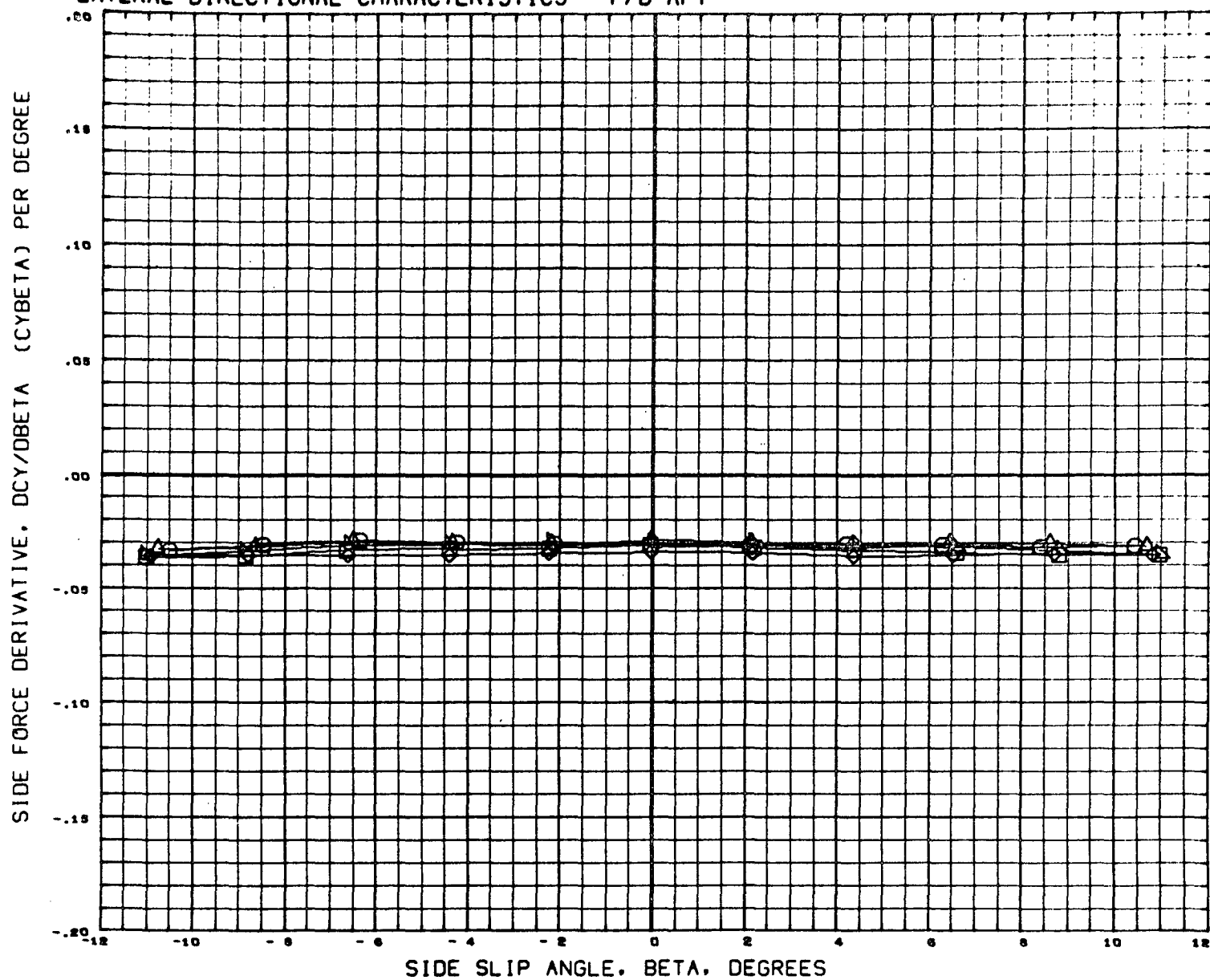


SYMBOL	MACH	PARAMETRIC VALUES			
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◇	0.008	ORBITC	0.000	ELVATR	0.000
△	1.101	AILRON	0.000	CANARD	0.000
□	1.402	ORBELV	0.000	ORBRUD	0.000
▽	1.096				

DATA HIST. CODE HV

REFERENCE INFORMATION		
SREF	19.6560	30 IN
LREF	3.0950	INCHES
QREF	6.0990	INCHES
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL-DIRECTIONAL CHARACTERISTICS - P/B AFT

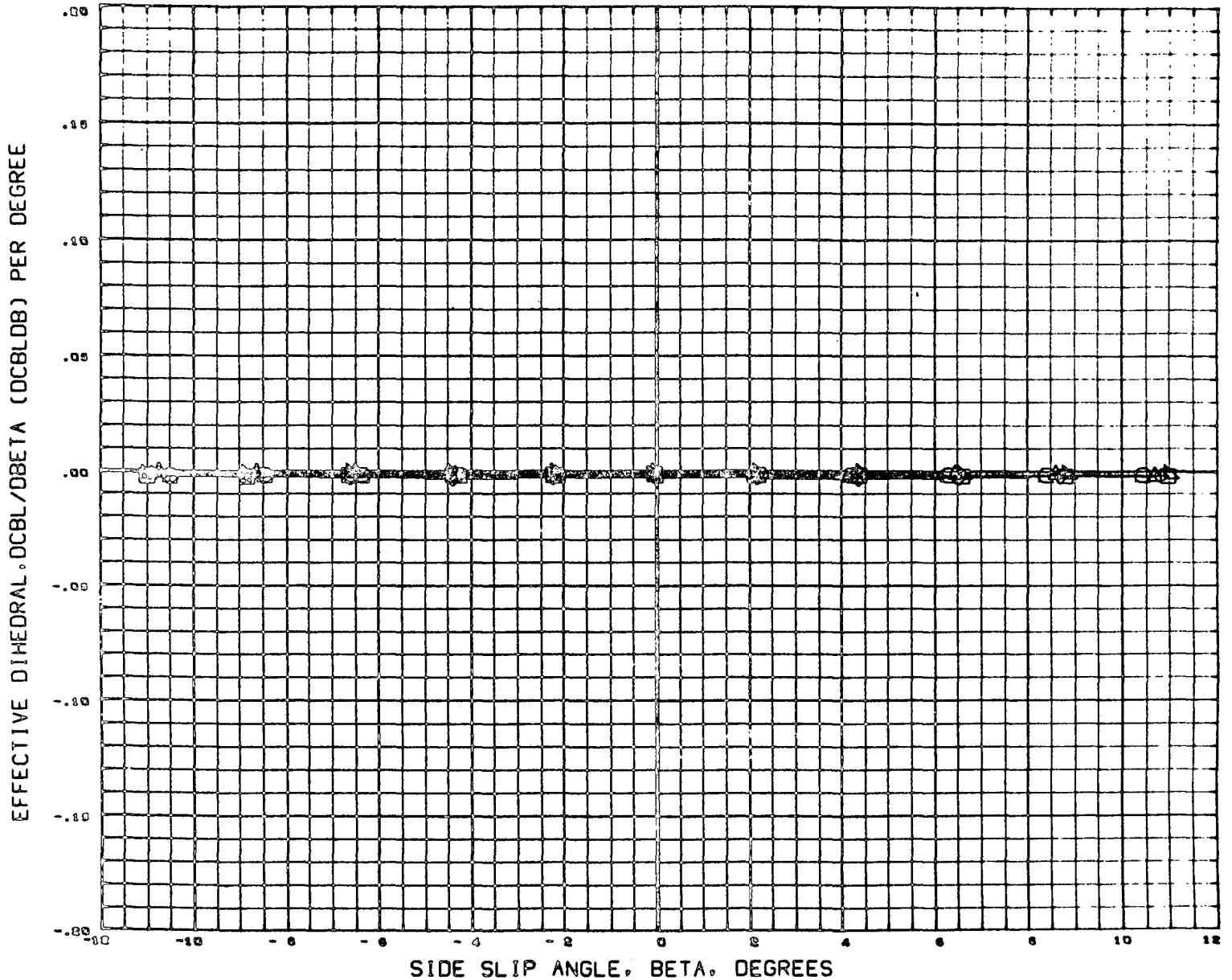


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.601	ALPHA	0.000	POSITN	3.000
△	0.698	ORBINC	0.000	ELVATR	0.000
◇	1.101	AILRON	0.000	CANARD	0.000
◊	1.462	ORBELV	0.000	ORBRUD	0.000
□	1.936				

DATA HIST. CODE MVG

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL-DIRECTIONAL CHARACTERISTICS - P/B AFT



SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
0	0.001	ALPHA	0.000	POSITN	3.000	SRF	19.6960	30 IN
0	0.000	ORINC	0.000	ELVAT	0.000	LREF	3.0930	INCHES
1	1.001	AILRON	0.000	CANARD	0.000	BREF	6.0990	INCHES
1	1.000	ORBELV	0.000	ORGRUD	0.000	XMRP	0.0000	
1	1.050					YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

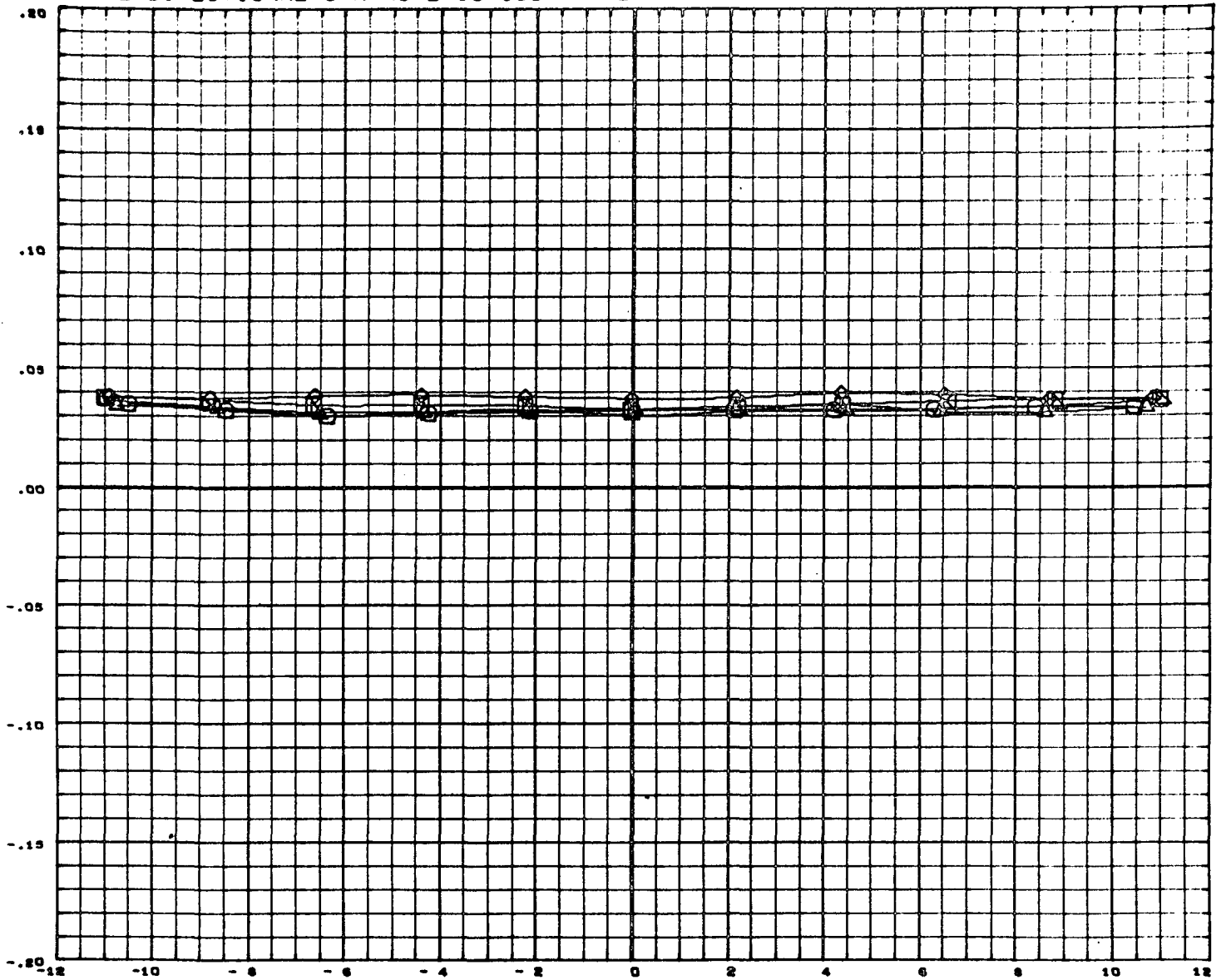
DATA HIST. CODE MVG

MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

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LATERAL-DIRECTIONAL CHARACTERISTICS - P/B AFT

DIRECTIONAL STABILITY DERIVATIVE, DCYN/DBETA (DCYNDB) PER DEGREE



SIDE SLIP ANGLE, BETA, DEGREES

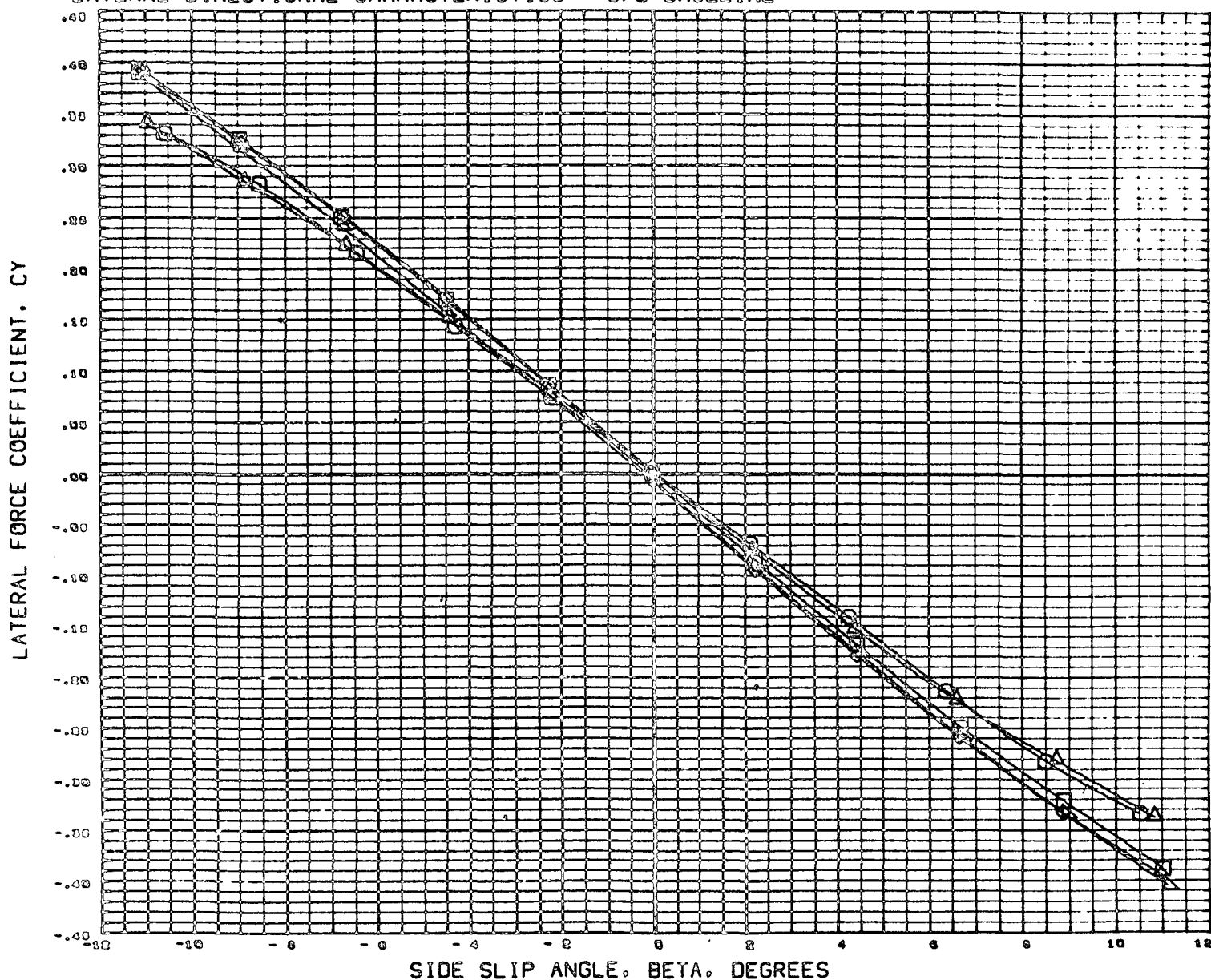
SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
◇	0.601	ALPHA	0.000	POSITN	3.000	SREF	15.6360	30 IN
◇	0.698	ORBINC	0.000	ELVATR	0.000	LREF	3.0950	INCHES
◇	1.101	AILRON	0.000	CANARD	0.000	BREF	6.0990	INCHES
◇	1.462	ORBELV	0.000	ORBRUD	0.000	XMRP	0.0000	
◇	1.956					YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

DATA HIST. CODE MVE

MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

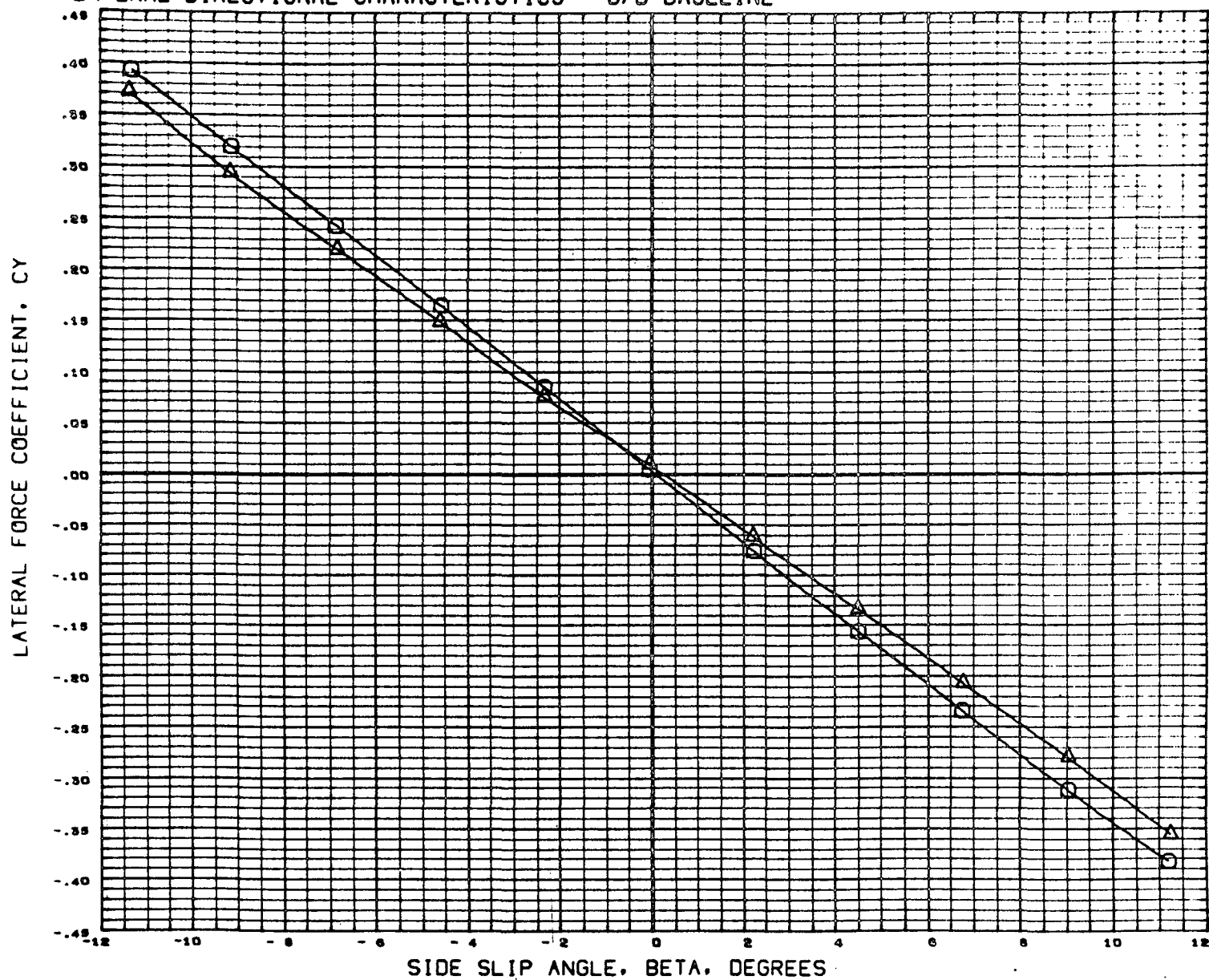
(13242C) 31 JUL 72 PAGE 475

LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE



SYMBOL	PARAMETRIC VALUES		REFERENCE INFORMATION	
	0.001	ALPHA	0.000	POSITN
	0.000	ORBITC	0.000	CANARD
	0.000	CLVATR	0.000	AILRON
	0.001	ORBLV	0.000	ORBRUD
1.002				
	DATA MIST. CODE		MV	
			SCALE	
			SCALE	

LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE



SYMBOL	MACH	PARAMETRIC VALUES			
○	1.459	ALPHA	0.000	POSITN	4.000
Δ	1.960	ORBINC	0.000	CANARD	0.000
		ELVATR	0.000	AILRON	0.000
		ORBELV	0.000	ORBRUD	0.000

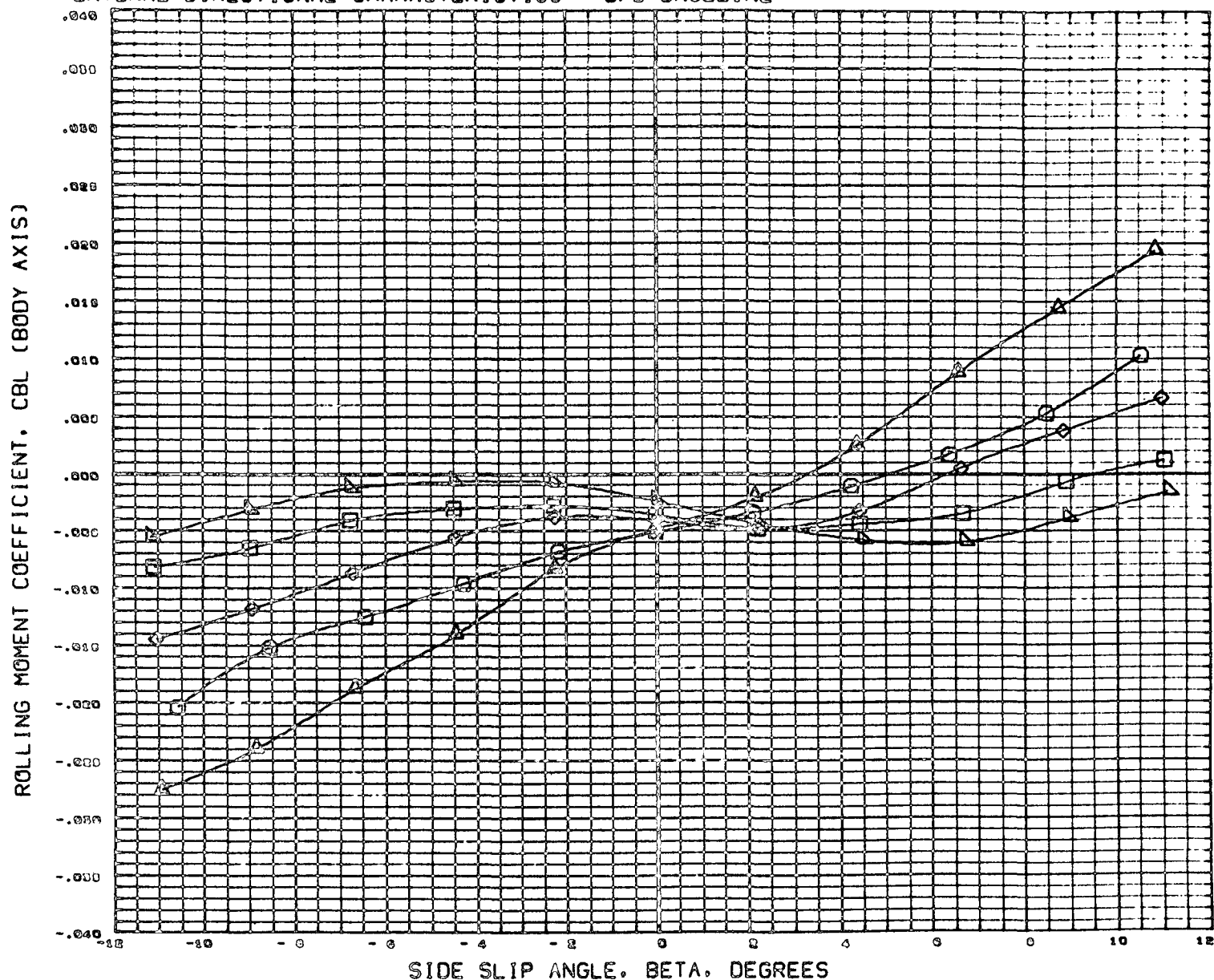
DATA HIST. CODE MV

REFERENCE INFORMATION		
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LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

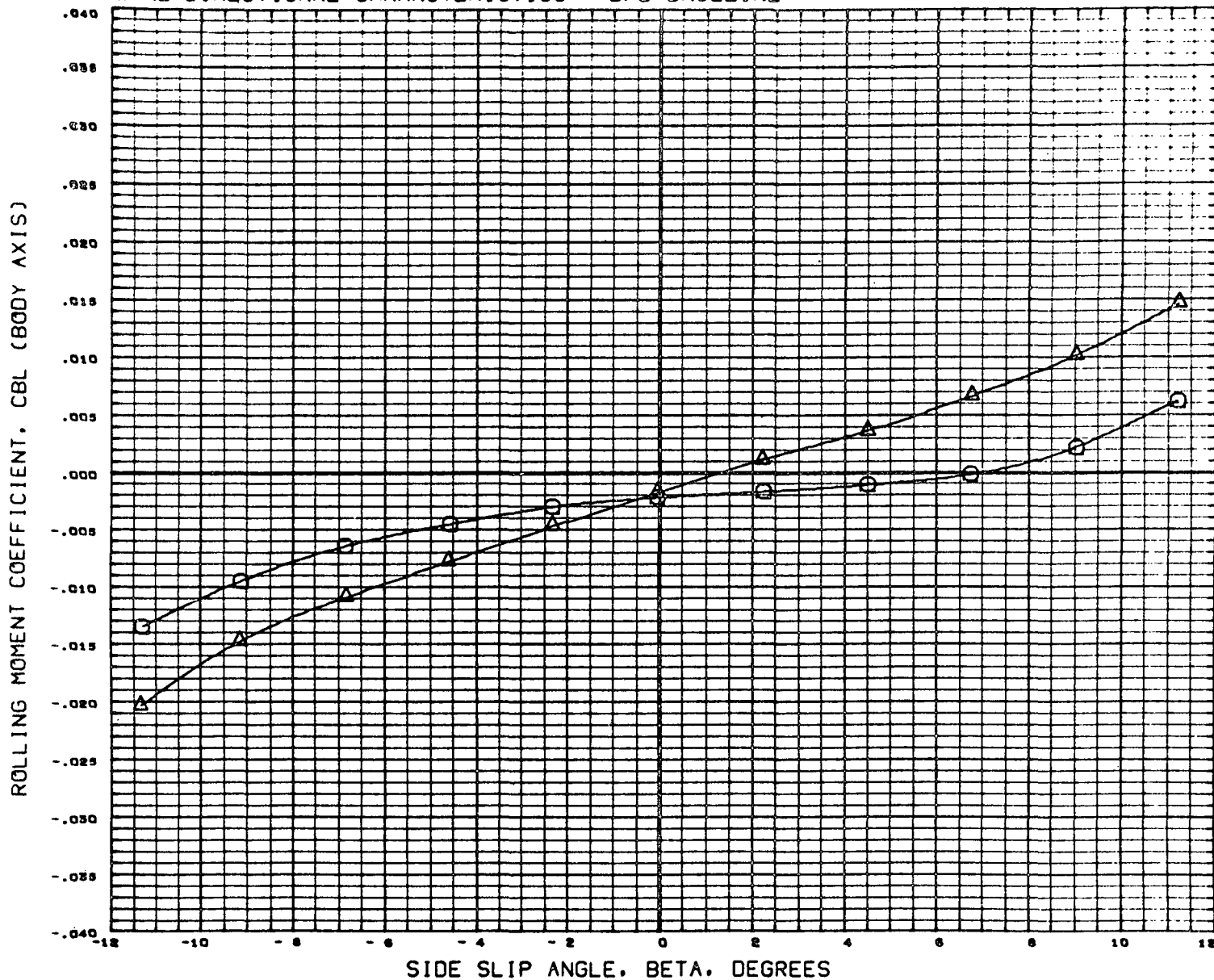
(A3250C) 20 JUL 72 PAGE 477

LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE



SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
◇	0.001	ALPHA	0.000	POSITN	4.000	SREP	15.6560	50 IN
◇	0.000	ORBINC	0.000	CANARD	0.000	LREP	5.0950	INCHES
◇	0.000	GLVATR	0.000	AILRON	0.000	QREP	6.0990	INCHES
◇	1.101	ORBZLV	0.000	ORBRUD	0.000	XMRP	0.0000	
◇	1.102					YMRP	0.0000	
◇						ZMRP	0.0000	
◇						SCALE	0.0035	SCALE
DATA HIST. CODE HV								

LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE

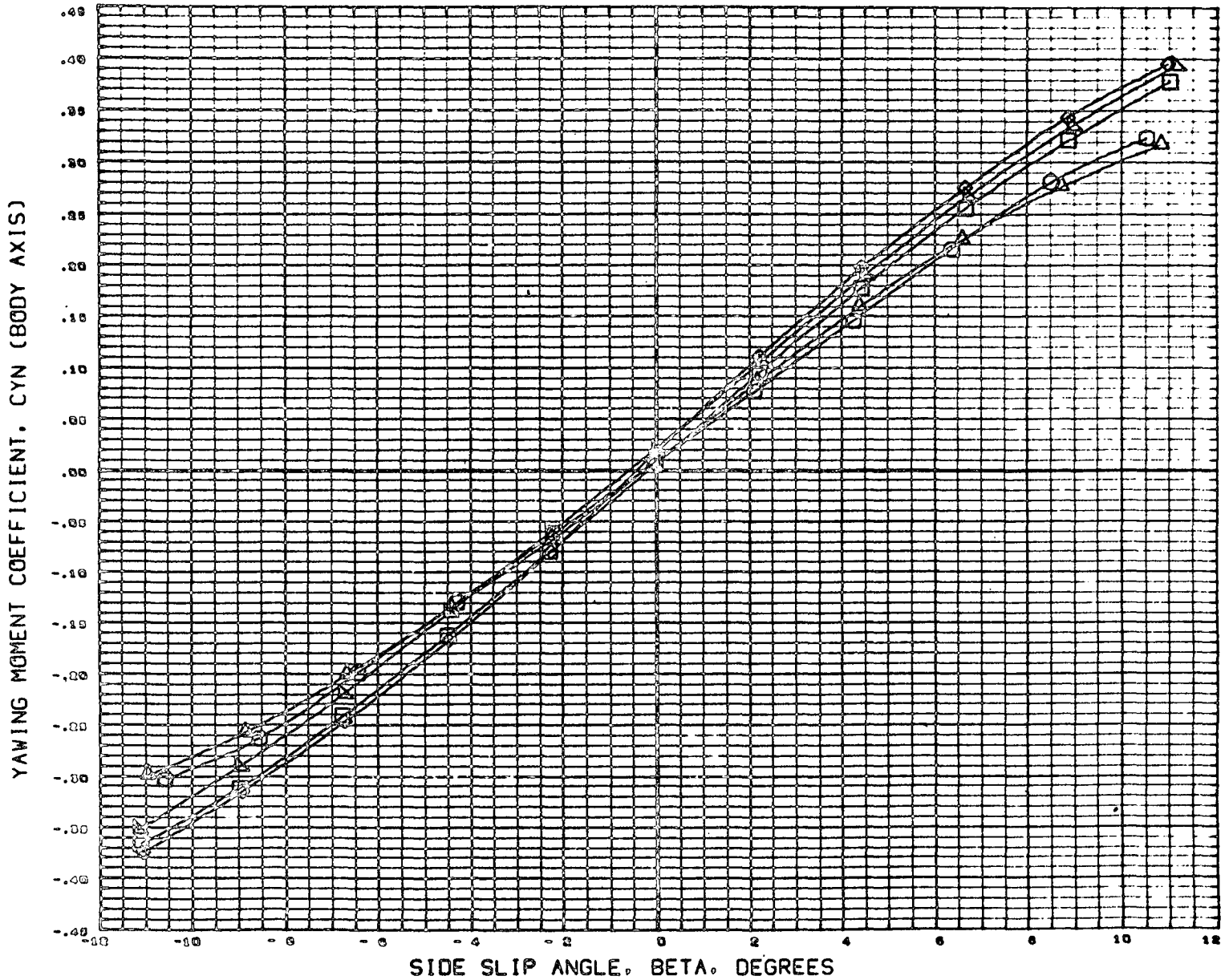


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.459	ALPHA	0.000	POSITN	4.000
△	1.960	ORBINC	0.000	CANARD	0.000
		ELVATR	0.000	AILRON	0.000
		ORBELV	0.000	ORBRUD	0.000

DATA HIST. CODE MV

REFERENCE INFORMATION		
SREP	13.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
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YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

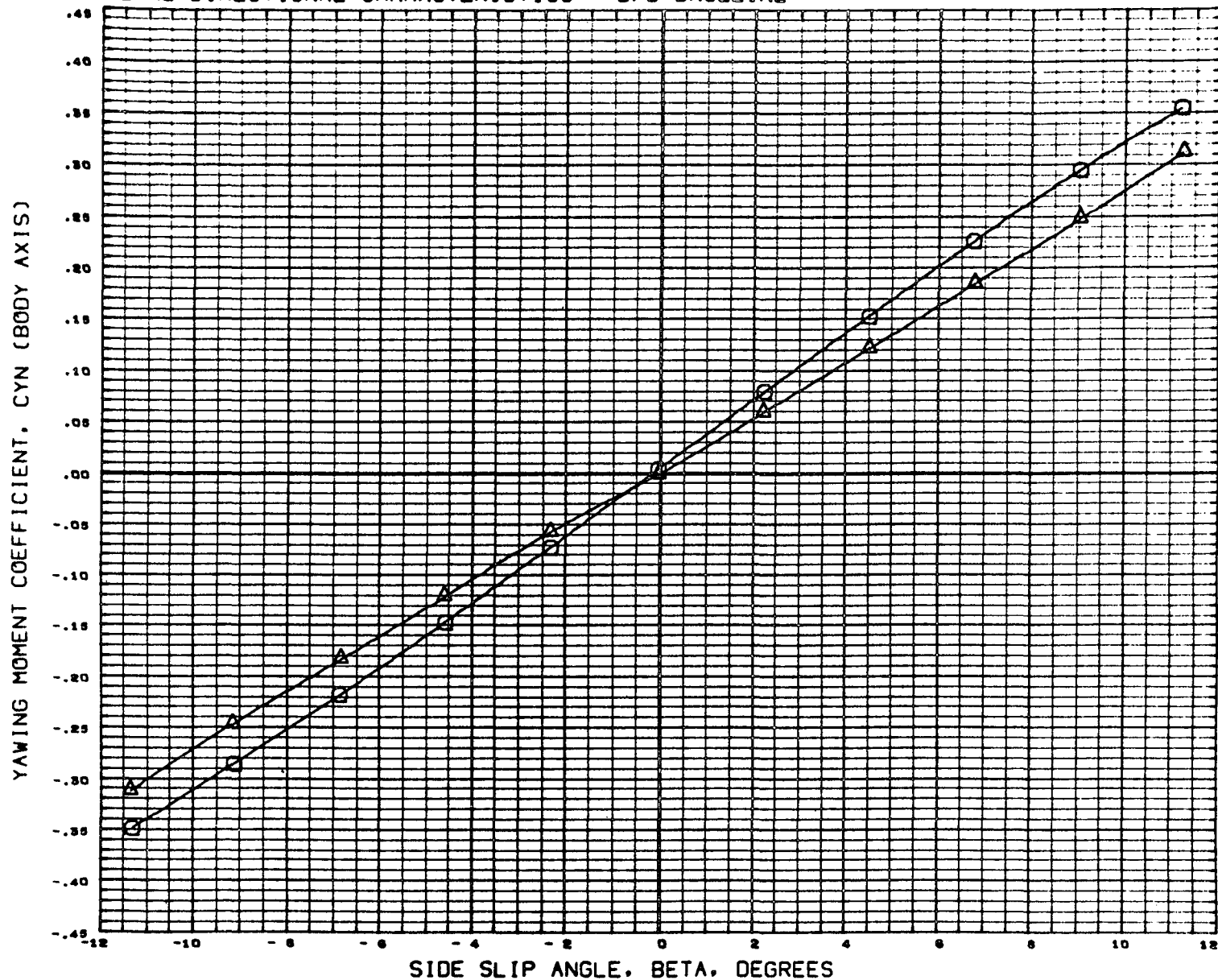
LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE



SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	0.001	ALPHA	0.000	POSITN	4.000	SREF	15.6560	SQ IN
◇	0.000	ORBINC	0.000	CANARD	0.000	LREF	3.0950	INCHES
□	0.000	ELVATR	0.000	AILRON	0.000	BREF	6.0990	INCHES
△	1.001	ORBELV	0.000	ORBRUD	0.000	XMRP	0.0000	
	1.002					YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

DATA MIST. CODE HV

LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE



SYMBOL	MACH	PARAMETRIC VALUES			
○	1.459	ALPHA	0.000	POSITN	4.000
△	1.960	ORBINC	0.000	CANARD	0.000
		ELVATR	0.000	AILRON	0.000
		ORSELY	0.000	ORBRUD	0.000

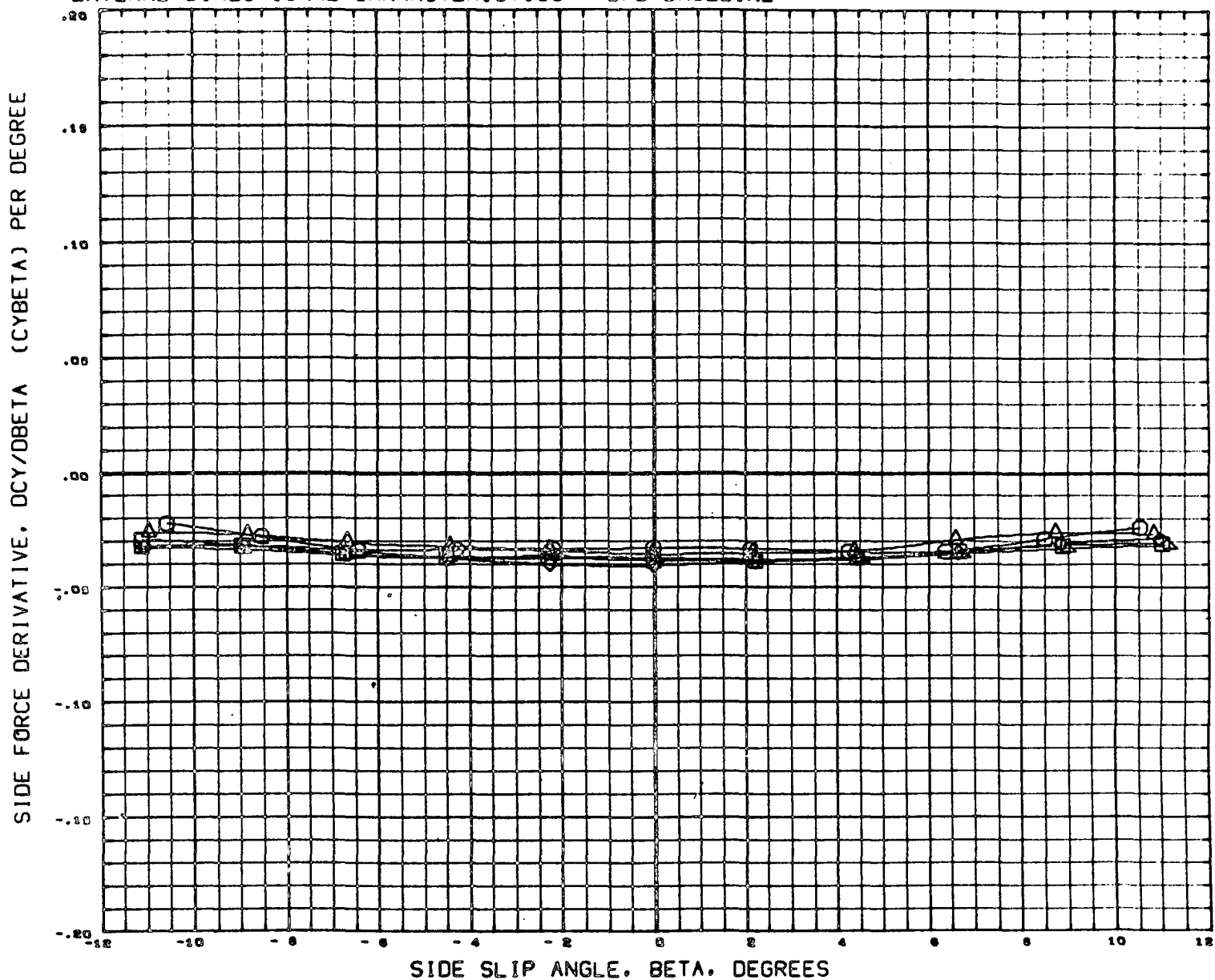
DATA HIST. CODE MV

REFERENCE INFORMATION		
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LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

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LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE

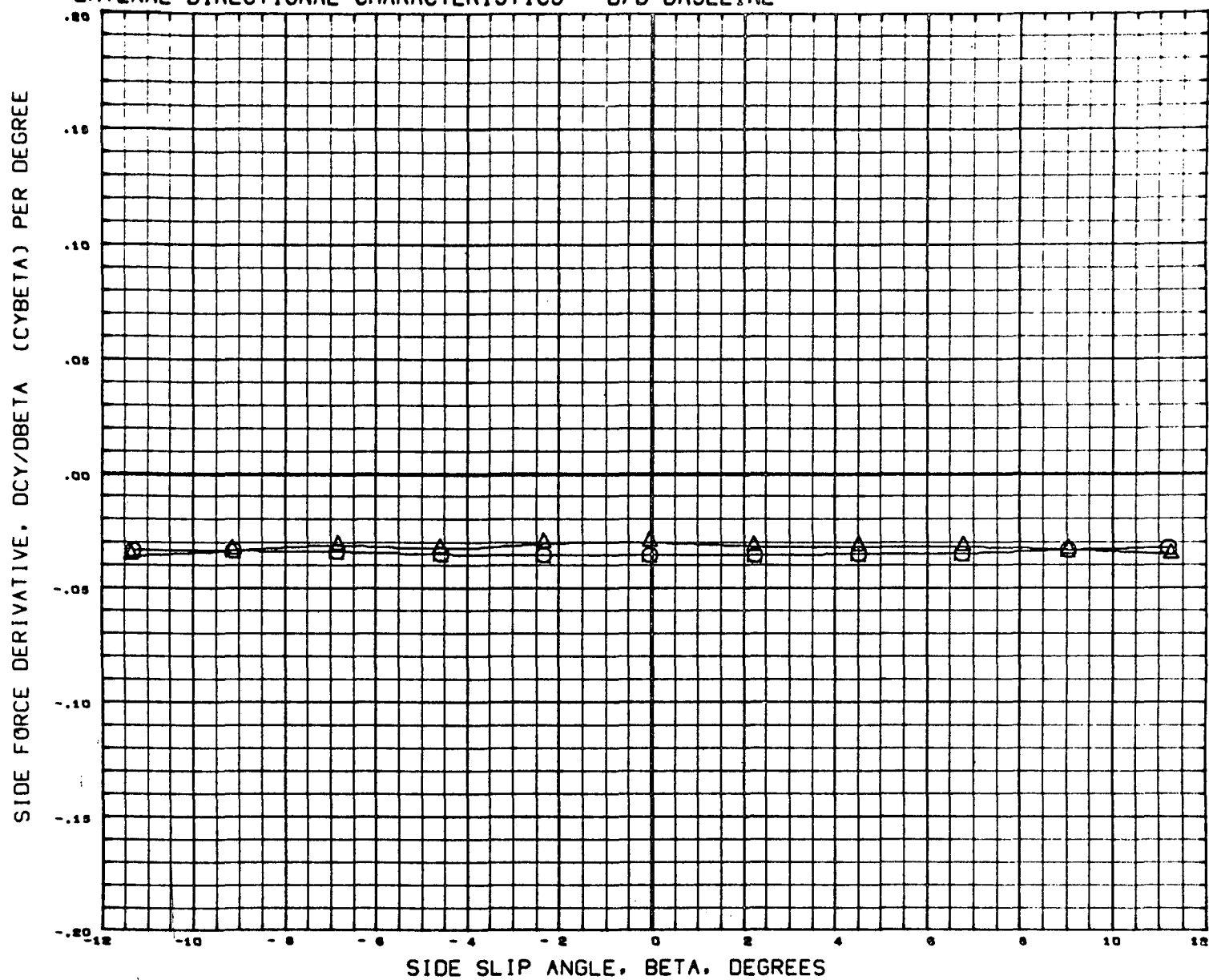


SYMBOL	MACH		PARAMETRIC VALUES				REFERENCE INFORMATION		
○	0.001	ALPHA	0.000	POSITN	4.000		SREF	15.6560	50 IN
Δ	0.009	ORGINC	0.000	CANARD	0.000		LREF	3.0950	INCHES
□	0.098	ELVATR	0.000	AILRON	0.000		BREF	6.0990	INCHES
◇	1.101	ORSELV	0.000	ORBRUD	0.000		XMRP	0.0000	
X	1.102						YMRP	0.0000	
							ZMRP	0.0000	
							SCALE	0.0035	SCALE
		DATA HIST. CODE	MVG						

MSFC490 NR/GD LAUNCH B20C4BW14V8-B5W17V17

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LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE

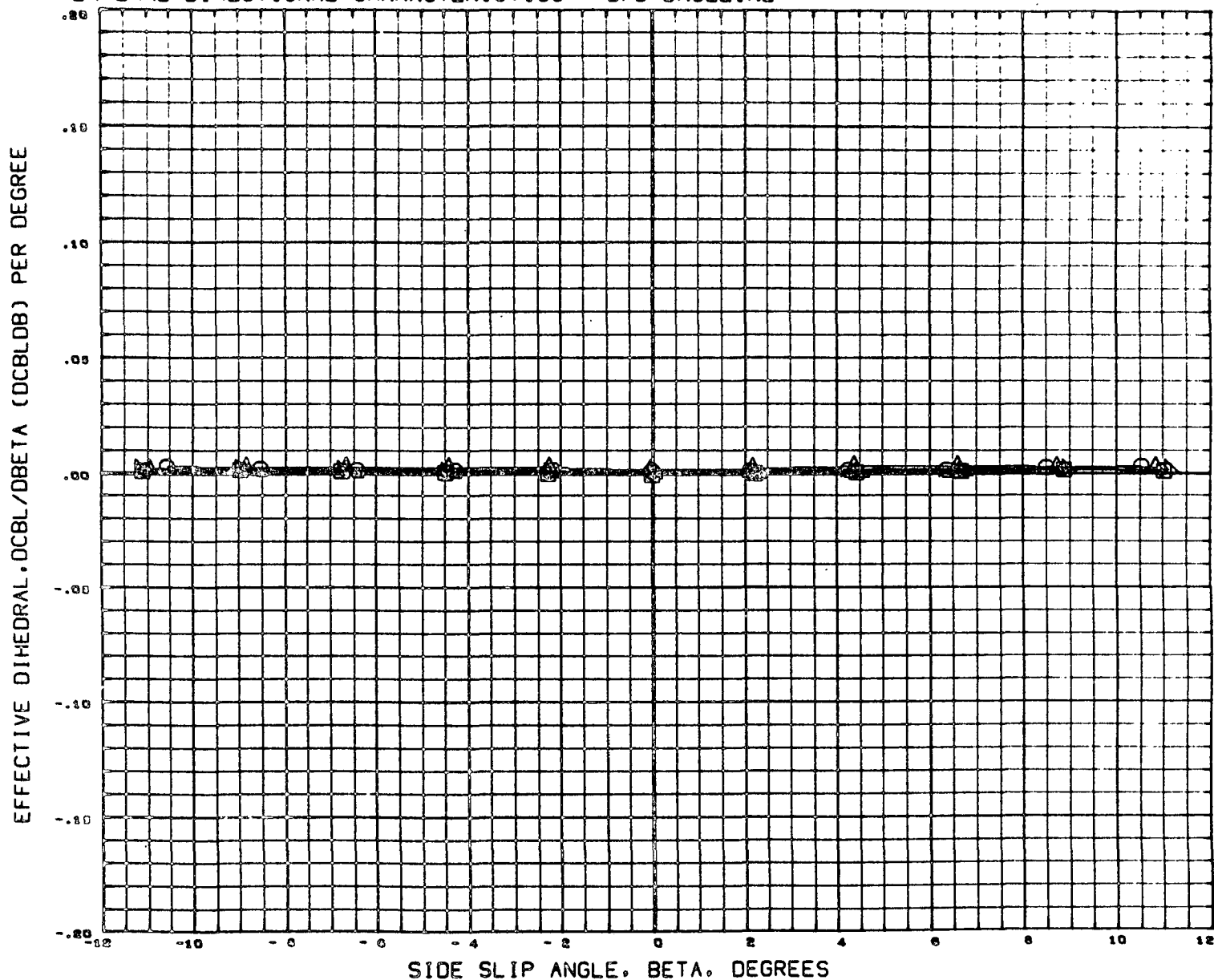


SYMBOL Δ	MACH	PARAMETRIC VALUES			
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	1.960	ORBINC	0.000	CANARD	0.000
		ELVATR	0.000	AILRON	0.000
		ORBELY	0.000	ORBRUD	0.000

DATA HIST. CODE MVG

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE



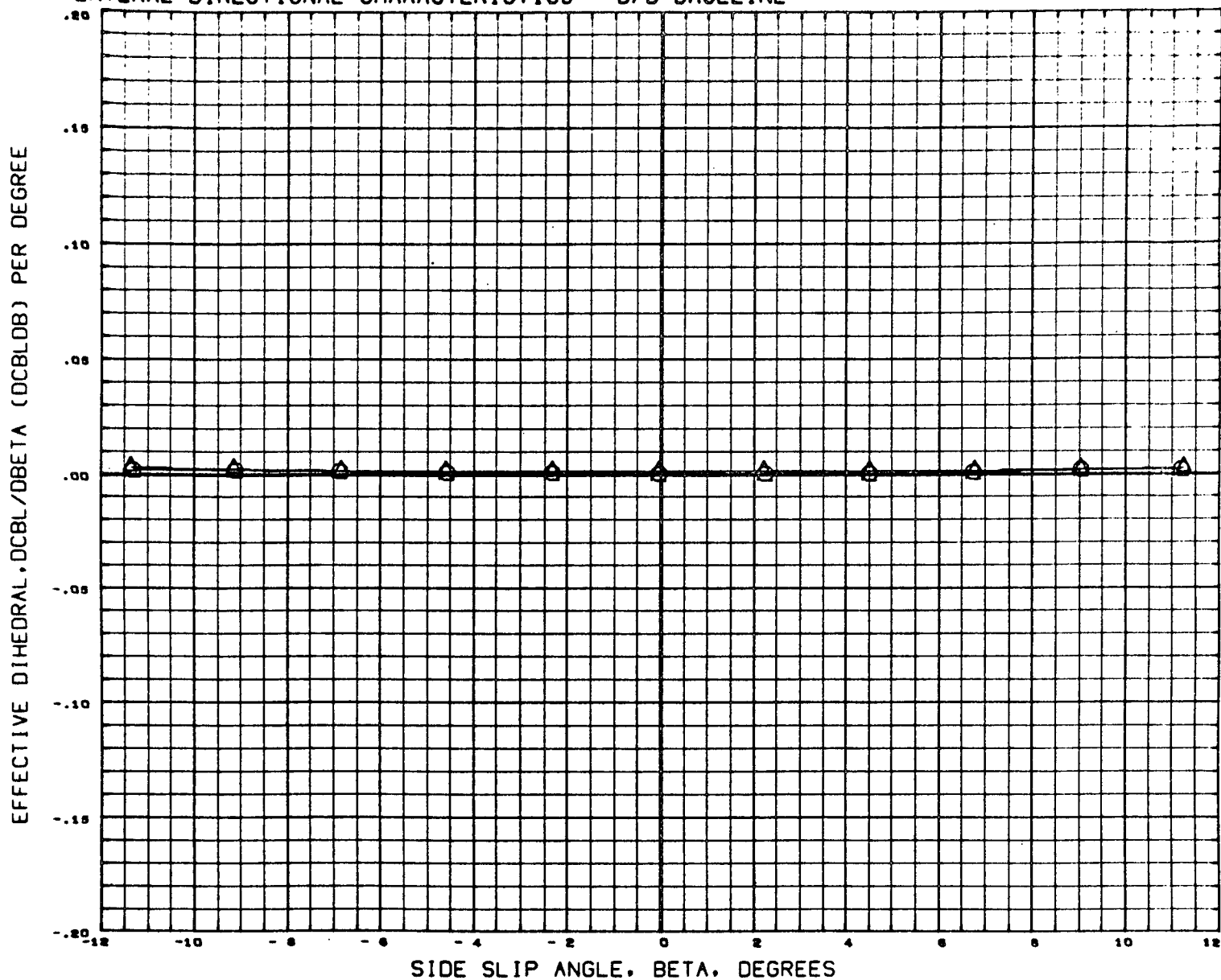
SYMBOL	MACH		PARAMETRIC VALUES				REFERENCE INFORMATION		
○	0.001	ALPHA	0.000	POSITN	4.000		SRFP	15.6560	SQ IN
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◇	0.998	ELVATR	0.000	AILRON	0.000		BRFP	0.0990	INCHES
□	1.101	CRSELV	0.000	ORGRUD	0.000		XMRF	0.0000	
◇	1.192						YMRF	0.0000	
							ZMRF	0.0000	
							SCALE	0.0035	SCALE
		DATA MIST. CODE	MV6						

MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

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LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE



SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
<div> <div></div> <div></div> </div>	1.459	ALPHA	0.000	POSITN	4.000	SREF	15.6360	30 IN
	1.960	ORBINC	0.000	CANARD	0.000	LREF	3.0990	INCHES
		ELVATR	0.000	AILRON	0.000	BREF	6.0990	INCHES
		ORBELV	0.000	ORBRUD	0.000	XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

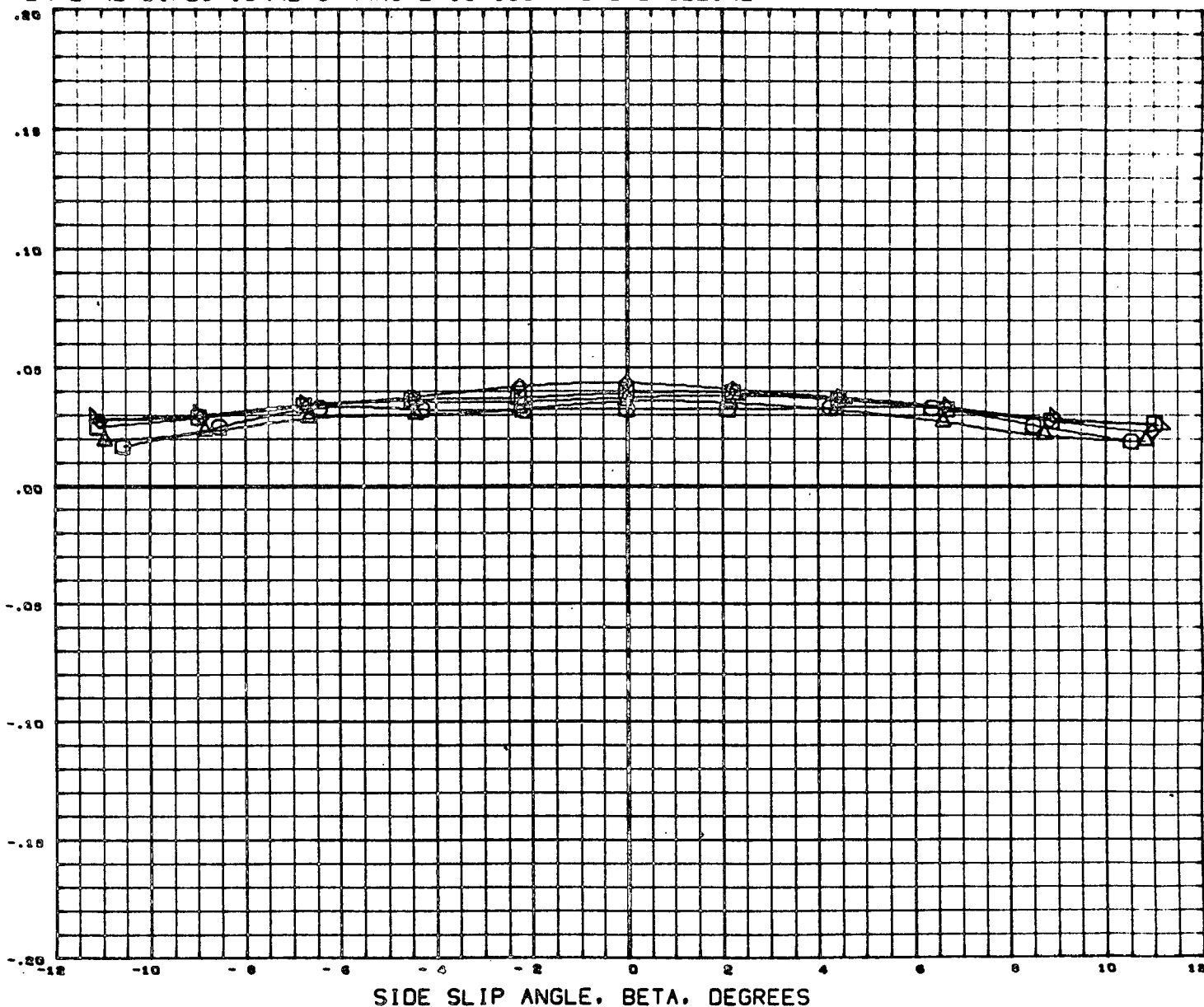
DATA HIST. CODE MVC

MSFC490 NR/GD LAUNCH B20C4BW14V8+B5W17V17

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LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE

DIRECTIONAL STABILITY DERIVATIVE, DCYN/DBETA (DCYNDB) PER DEGREE



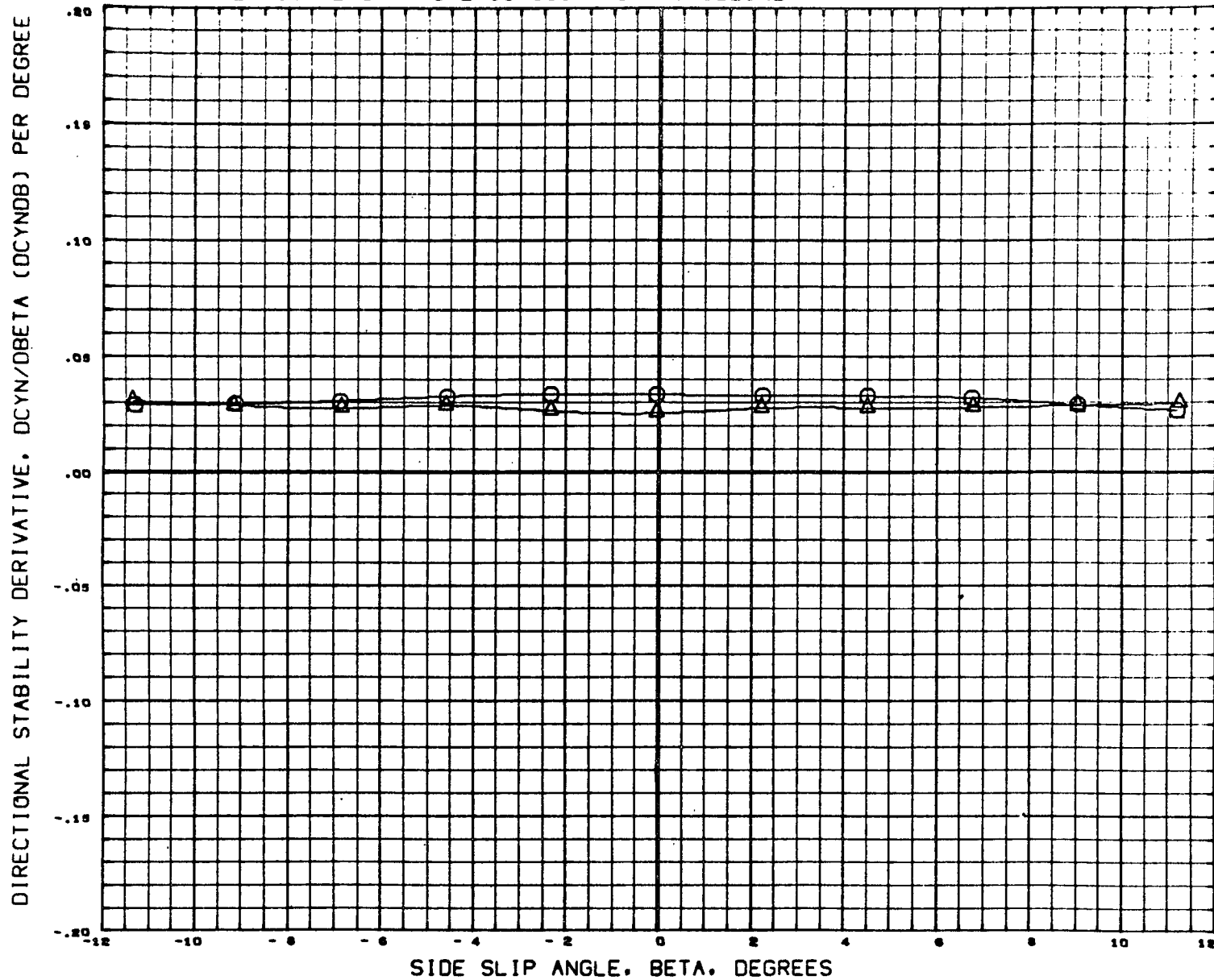
SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
◇◇◇◇	0.601	ALPHA	0.000	POSITN	4.000	SREF	15.6560	30 IN
◇◇◇◇	0.690	ORBINC	0.000	CANARD	0.000	LREF	3.0990	INCHES
◇◇◇◇	0.696	ELVATR	0.000	AILRON	0.000	BREF	6.0990	INCHES
◇◇◇◇	1.101	ORBELV	0.000	ORGRUD	0.000	XMRP	0.0000	
◇◇◇◇	1.102					YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0035	SCALE

DATA HIST. CODE MV6

MSFC490 NR/GD LAUNCH B20C4BW14V8+85W17V17

(13250C) 31 JUL 72 PAGE 486

LATERAL-DIRECTIONAL CHARACTERISTICS - B/B BASELINE

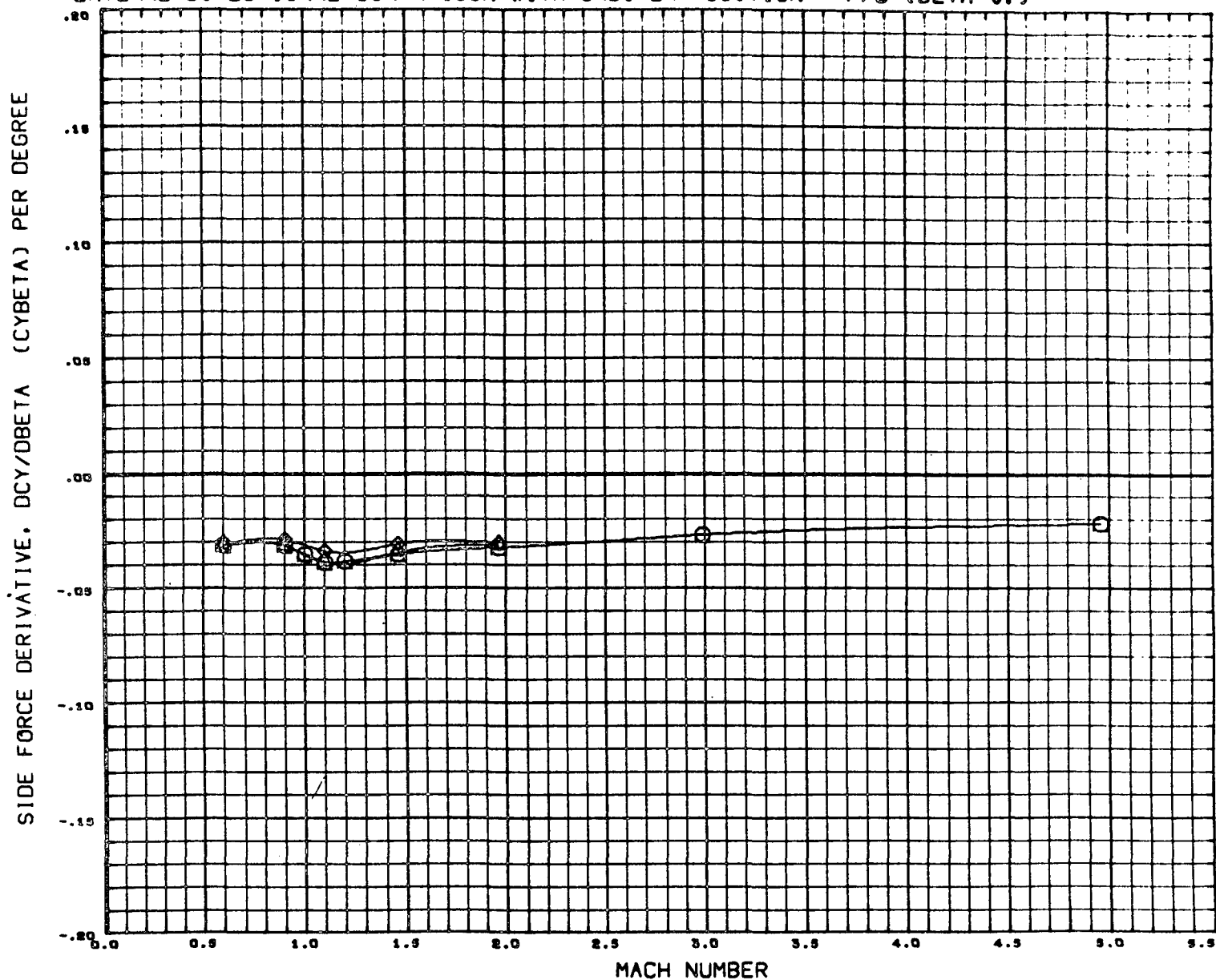


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.459	ALPHA	0.000	POSITN	4.000
△	1.900	ORBNIC	0.000	CANARD	0.000
		ELVATR	0.000	AILRON	0.000
		ORBELV	0.000	ORBRUD	0.000

DATA HIST. CODE MVG

REFERENCE INFORMATION		
SRFP	15.6560	SQ IN
LRFP	3.0950	INCHES
BRFP	6.0990	INCHES
XRFP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL-DIRECTIONAL COMPARISON WITH ORBITER POSITION - P/B (BETA=0.)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3222C)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17
(J3238C)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17
(J3242C)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17

ALPHA	ELVATR	POSITN
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0.000	0.000	2.000
0.000	0.000	3.000

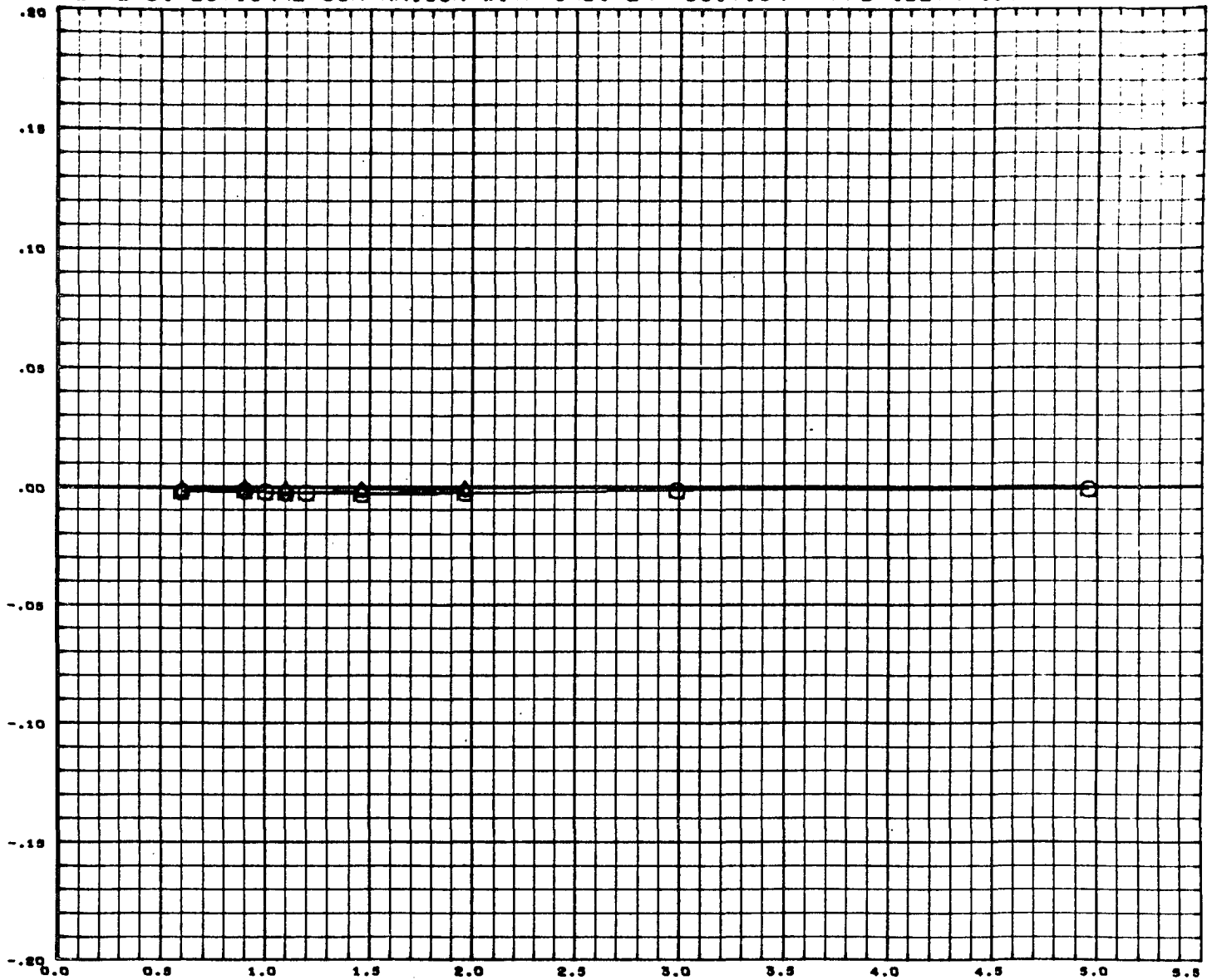
REFERENCE INFORMATION		
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LREF	3.0930	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BETA .00

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LATERAL-DIRECTIONAL COMPARISON WITH ORBITER POSITION - P/B (BETA=0.)

EFFECTIVE DIHEDRAL.DCBL/OBETA (DCBLOB) PER DEGREE



MACH NUMBER

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3222C)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17
(J3238C)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17
(J3242C)	MSFC490 NR/GD LAUNCH B20C48W14V8+B3W17V17

ALPHA	ELVATR	POSITN
0.000	0.000	1.000
0.000	0.000	2.000
0.000	0.000	3.000

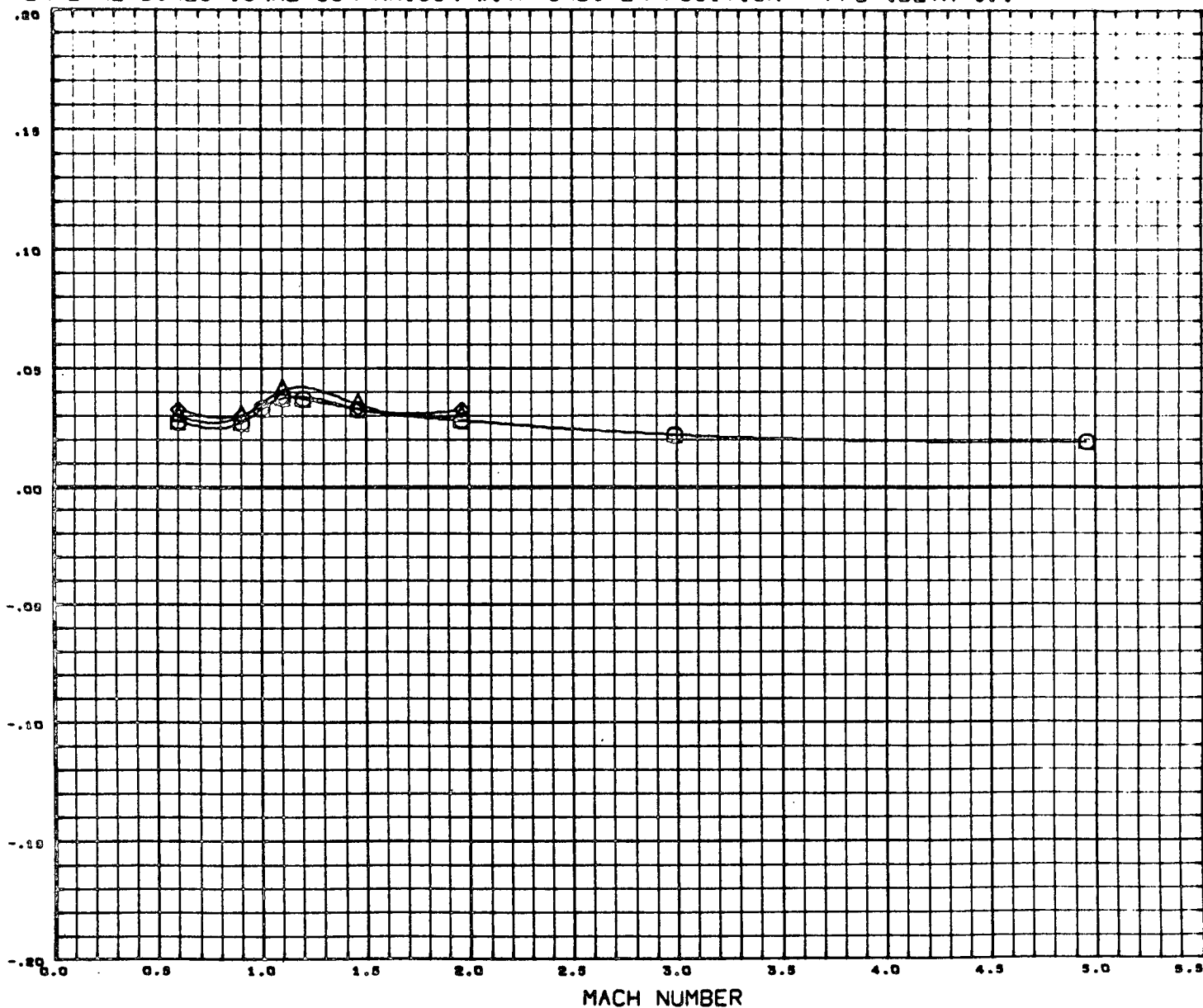
REFERENCE INFORMATION		
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LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0033	SCALE

BETA .00

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LATERAL-DIRECTIONAL COMPARISON WITH ORBITER POSITION - P/B (BETA=0.)

DIRECTIONAL STABILITY DERIVATIVE, DCYN/DBETA (DCYNDB) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3222C)	MSFC490 NR/GD LAUNCH B20C4BW14V6+BSW17V17
(J3236C)	MSFC490 NR/GD LAUNCH B20C4BW14V6+BSW17V17
(J3242C)	MSFC490 NR/GD LAUNCH B20C4BW14V6+BSW17V17

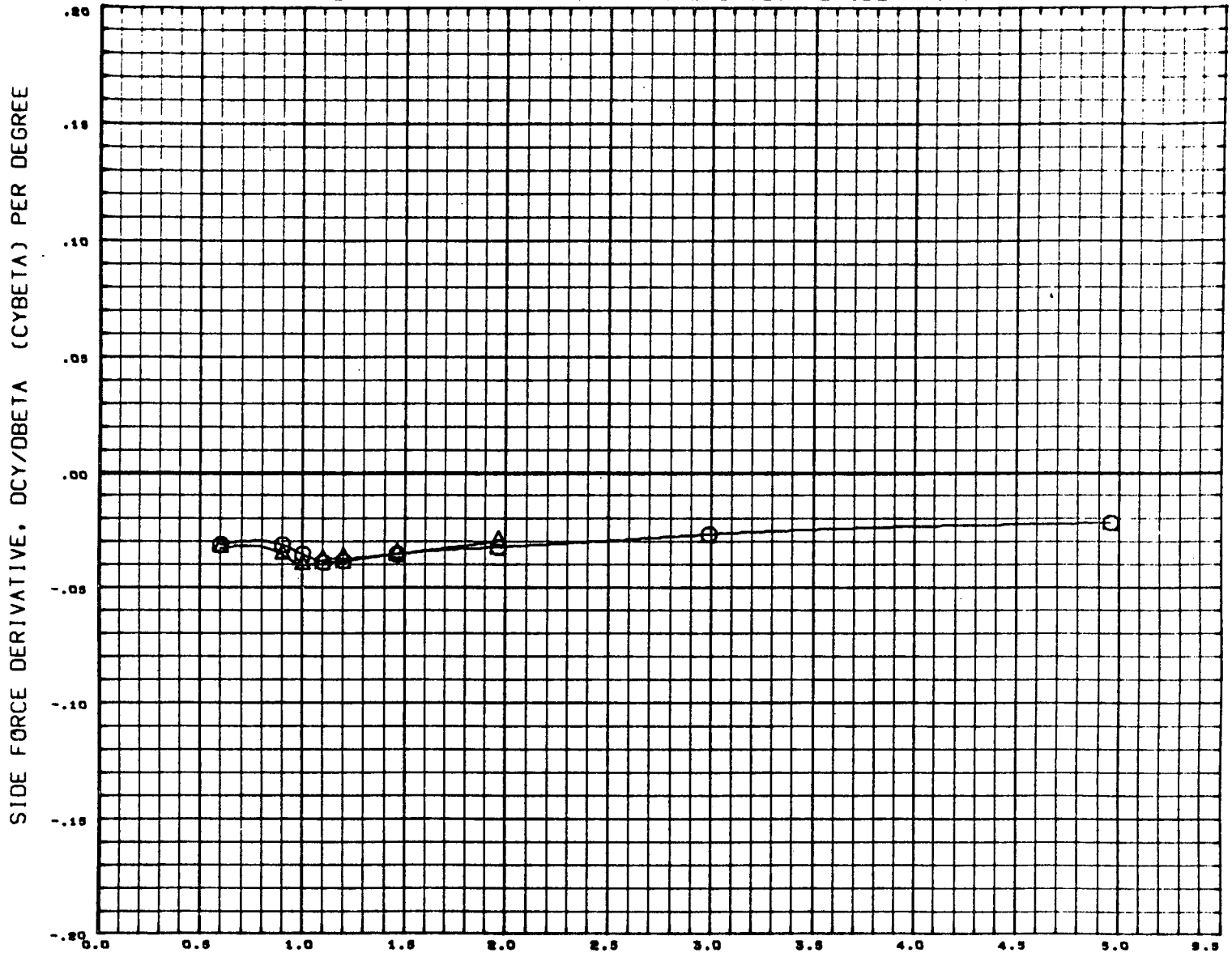
ALPHA	ELVATR	POSITN
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0.000	0.000	2.000
0.000	0.000	3.000

REFERENCE INFORMATION		
SREF	15.6360	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BETA .00

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LATERAL-DIRECTIONAL COMPARISON - P/B AND B/B BASELINE (BETA=0.)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3222C)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(J3230C)	MSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

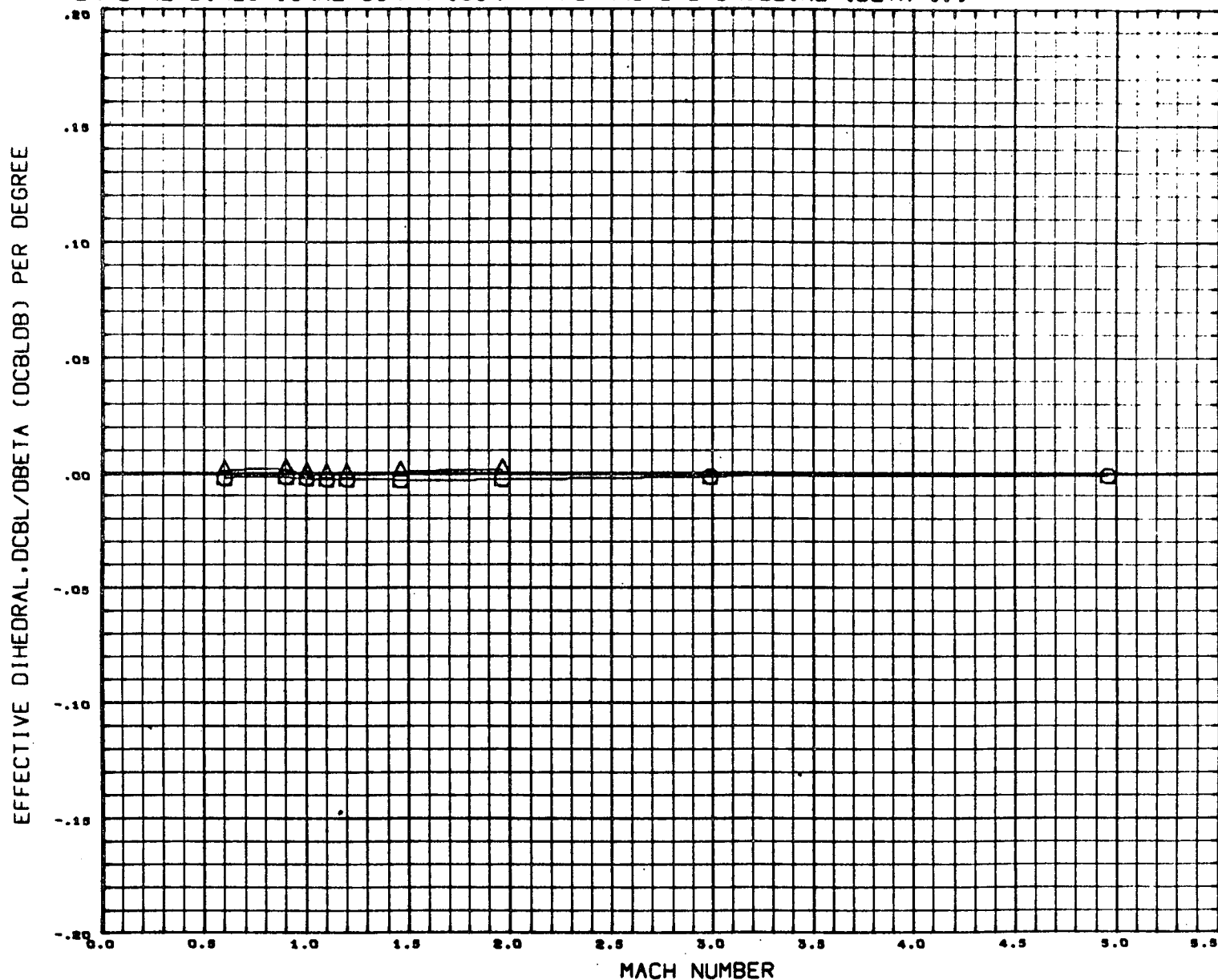
ALPHA	ELVATR	POSITN
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0.000	0.000	4.000

REFERENCE INFORMATION		
SREF	15.6560	50 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRR	0.0000	
YMRR	0.0000	
ZMRR	0.0000	
SCALE	0.0035	SCALE

BETA .00

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LATERAL-DIRECTIONAL COMPARISON - P/B AND B/B BASELINE (BETA=0.)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J3222C)	HSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17
(J3250C)	HSFC490 NR/GD LAUNCH B20C4BW14V8+B3W17V17

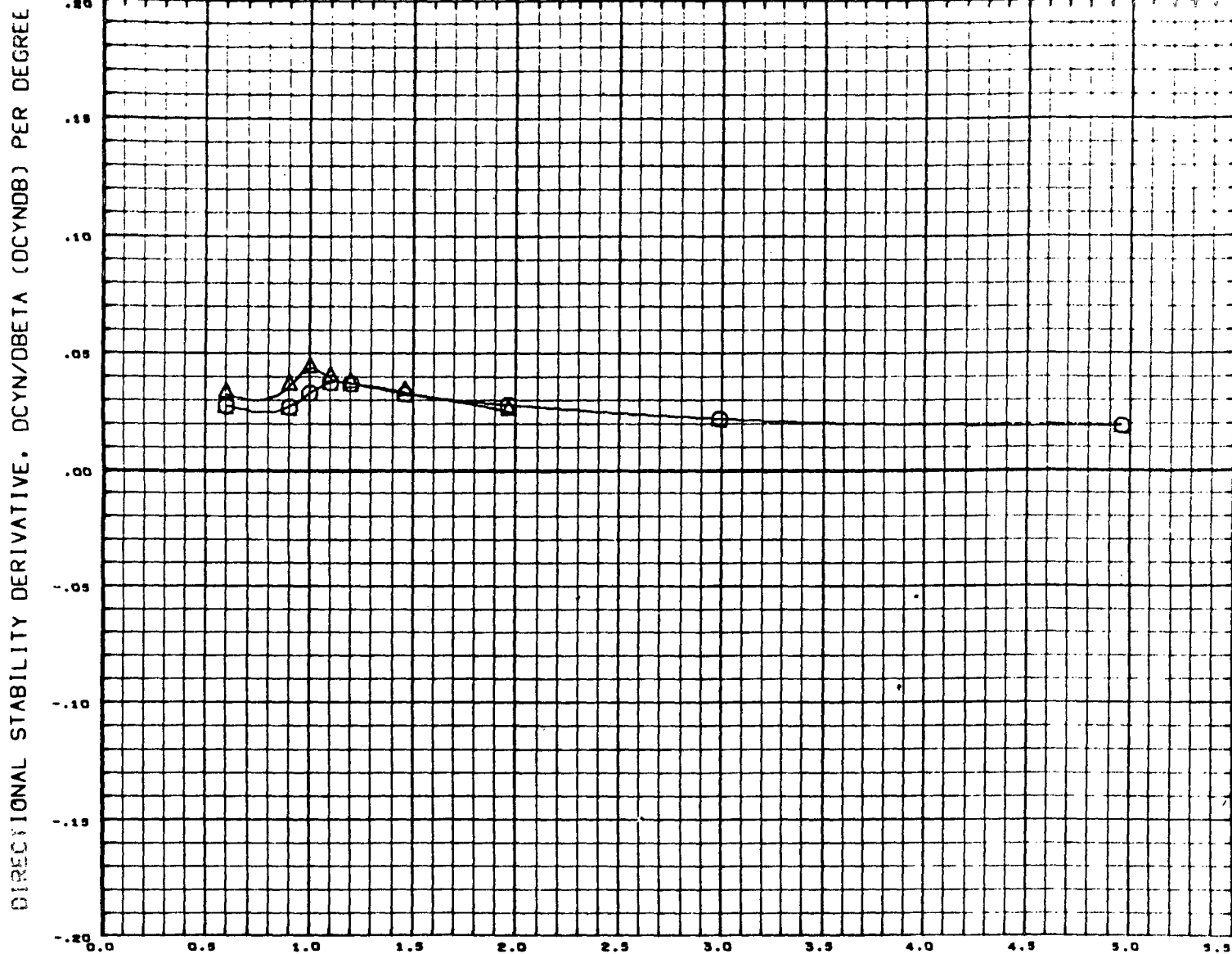
ALPHA	ELVATR	POSITN
0.000	0.000	1.000
0.000	0.000	4.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BETA .00

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LATERAL-DIRECTIONAL COMPARISON - P/B AND B/B BASELINE (BETA=0.)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(J322C)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17
(J3250C)	MSFC490 NR/GD LAUNCH 820C48W14V8+85W17V17

ALPHA	ELVATR	POSITN
0.000	0.000	1.000
0.000	0.000	4.000

REFERENCE INFORMATION		
SREF	15.6560	30 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BETA .00

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